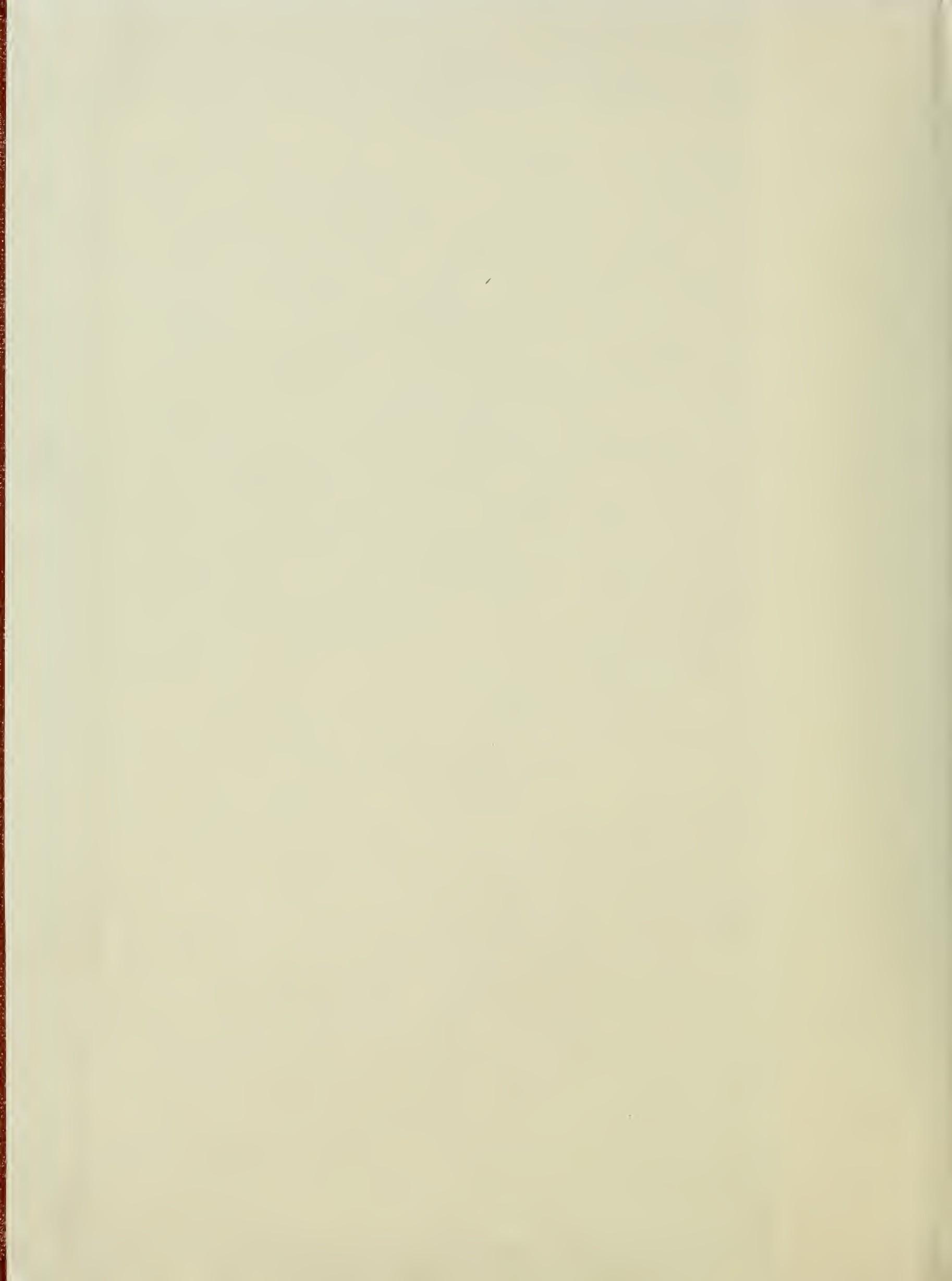
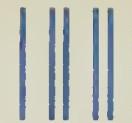


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Census of Manufactures

MC82-I-35D

INDUSTRY SERIES

Special Industry Machinery, Except Metalworking Machinery

Industries 3551, 3552, 3553, 3554, 3555, and 3559



The publications
from the 1982 Economic and
Agriculture Censuses are dedicated
to the memory of Shirley Kallek,
Associate Director for Economic Fields.
During her career at the Bureau of the
Census (1955 to 1983), she continually
directed efforts to improve
the timeliness and accuracy of
economic statistics.

1982 Census of Manufactures

MC82-I-35D

INDUSTRY SERIES

Special Industry Machinery, Except Metalworking Machinery

- 3551 Food Products Machinery
 - 3552 Textile Machinery
 - 3553 Woodworking Machinery
 - 3554 Paper Industries Machinery
 - 3555 Printing Trades Machinery
 - 3559 Special Industry Machinery, N.E.C.
-

Issued January 1985



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INDUSTRY DIVISION

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INTRODUCTION

ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications¹ (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the

Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

¹Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.

CENSUS OF MANUFACTURES

General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.¹ This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

¹Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.

IV INTRODUCTION

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

1. Small Single-Unit Companies Not Sent a Report Form

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excused from filing reports. Selection of these small

establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative record cases were given only a two- or three-digit SIC group. For the 1982 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments Sent a Report Form

The 205,000 establishments covered in the mail canvass were divided into three groups:

a. **ASM sample establishments**—This group consisted of approximately 55,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll,

and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. Results of the ASM inquiries are included in tables 3c and 3d of this report.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the approximately 450 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space was also provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. **Large and medium establishments (non-ASM)**—Approximately 100,000 establishments were included in this group. A variable cutoff, based on administrative records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. **Small single-unit establishments (non-ASM)**—This group consisted of approximately 50,000 establishments. For those industries where application of the variable cutoff for administrative records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same

data were collected on the short as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values of the n.s.k. categories.

Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 Enterprise Statistics survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two or more establishments. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting, tax accounting, company sales and profit reports, and personnel accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

Industry Classification of Establishments

Each of the establishments covered in the census was classified in one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450

industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and about 11,000 products, identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in making those products. For example, establishments engaged in blast furnace operations, refining of nonferrous metals from ore, or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for two successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures). However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is true particularly for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in tables 6a through 6c represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the

composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios, which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfer of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

Value of Shipments for the Industry Compared With Value of Product Shipments

This industry report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Product shipments shown in table 6a represent the total value of shipments of products classified as primary to an industry that were shipped by all manufacturing establishments regardless of their industry classification.

CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this item may be given even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line has been suppressed. However, the suppressed data are included in higher level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, D.C. 20233.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

- Represents zero.
- (D) Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
- (NA) Not available.
- (NC) Not comparable.
- (S) Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
- (X) Not applicable.
- (Z) Less than half the unit shown.
- n.e.c. Not elsewhere classified.
- n.s.k. Not specified by kind.
- pt. Part.
- r Revised.
- SIC Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

Users' Guide for Locating Statistics

[For explanation of terms, see appendixes]

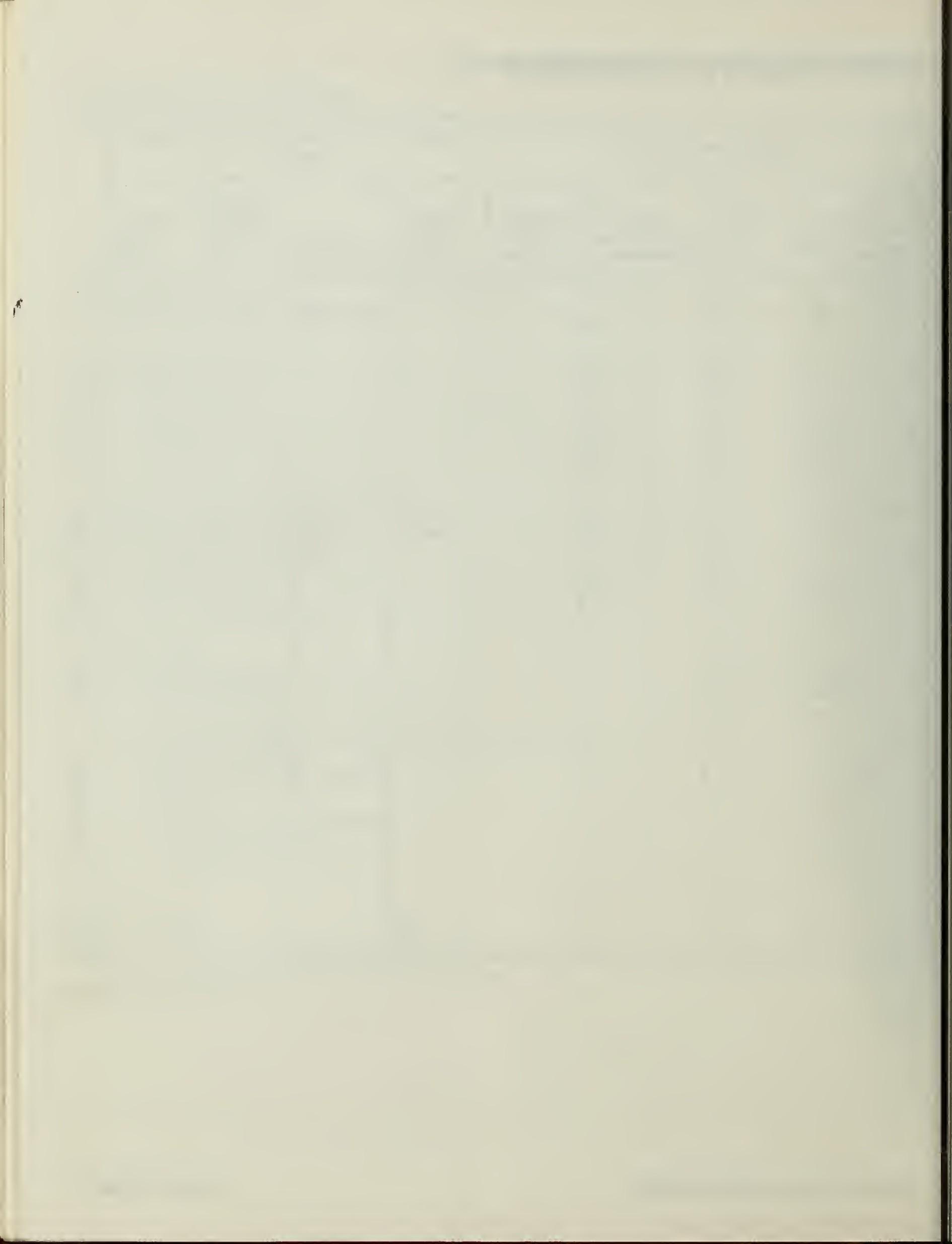
	Item	Four-digit industry statistics		
		Historical	Operating ratios	By geographic area
1	Number of companies	1a		
2	Number of manufacturing establishments	1a		2
	Employment and payroll:			
3	Number of employees	1a	1b	2
4	Payroll	1a	1b	2
5	Supplemental labor costs			
6	Production workers	1a	1b	2
7	Production-worker hours	1a	1b	2
8	Production-worker wages	1a	1b	2
	Shipments, cost of materials, and value added:			
9	Value of shipments (four-digit)	1a	1b	2
10	Product class shipments (five-digit)			
11	Product shipments (seven-digit)			
12	Value added by manufacture	1a	1b	2
13	Cost of materials	1a	1b	2
14	Fuels and electric energy			
15	Materials consumed by kind			
	Inventories:			
16	Total, end of year	1a		
17	By method of valuation			
18	By stage of fabrication			
	Capital expenditures, assets, rental payments, and purchased services:			
19	New capital expenditures	1a		2
20	Used plant and equipment expenditures			
21	Gross assets			
22	Depreciation			
23	Retirements of buildings and machinery			
24	Rental payments			
25	Purchased services			
	Ratios:			
26	Specialization	1a		
27	Coverage	1a		

*Number of companies with shipments of over \$100 thousand.

**Detailed information shown.

In This Report by Table Number

Four-digit industry statistics—Con.				Five-digit product class and seven-digit product statistics				
Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class	
3a **3a	4	5a			*6a			1 2
3a 3a **3d **3a **3a 3a	4	5a 5a 5a 5a 5a						3 4 5 6 7 8
3a	4	5a		5b, 5c 5b, 5c	6a 6a	6b	6c	9 10 11
3a **3a 3a, 3d	4	5a 5a						12 13 14 15
3b, 3c 3b, 3c 3b	4		7					16 17 18
**3a, **3d **3a, **3d **3d **3d **3d **3d **3d **3d	4	5a						19 20 21 22 23 24 25
3a 3a				5b 5b				26 27



Special Industry Machinery, Except Metalworking Machinery

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DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

SPECIAL INDUSTRY MACHINERY

This report shows 1982 Census of Manufactures statistics for establishments classified in each of the following industries:

SIC Code and Title

3551	Food Products Machinery
3552	Textile Machinery
3553	Woodworking Machinery
3554	Paper Industries Machinery
3555	Printing Trades Machinery
3559	Special Industry Machinery, N.E.C.

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1a-5a) with product statistics (table 6a) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other government agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions contained in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 supplement.¹

INDUSTRY 3551, FOOD PRODUCTS MACHINERY

This industry comprises establishments primarily engaged in the manufacture of machinery for use by the food products and beverage manufacturing industries in the preparation, canning, or packaging of food products; and parts and attachments for such machinery. Establishments primarily engaged in the manufacture of industrial refrigeration machinery are classified in industry group 385.

¹Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-005-00176-0.

In the 1982 Census of Manufactures, Industry 3551, Food Products Machinery, recorded employment of 32.7 thousand. The total value of shipments for establishments classified in this industry was \$2,321 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 10 percent below the 36.3 thousand reported in 1977. The leading States in employment in 1982 were California, Ohio, Wisconsin, and Illinois, accounting for approximately 42 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 46 percent of the industry's employment.

Compared with 1981, employment decreased 8 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3551 shipped \$1,970 million of products primary to the industry, \$158 million of secondary products, and had \$193 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 93 percent (specialization ratio). In 1977, this specialization ratio was 90 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 92 percent. The products primary to industry 3551, no matter in what industry they were produced, appear in table 6a and aggregate to \$2,160 million in current prices.

The total cost of materials and services used by establishments classified in the food products machinery industry amounted to \$957 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 8 percent of total value of shipments.

INDUSTRY 3552, TEXTILE MACHINERY

This industry comprises establishments primarily engaged in the manufacture of machinery for the textile industries, including parts, attachments, and accessories. Establishments primarily

engaged in the manufacture of domestic or industrial sewing machines are classified in industry 3636.

In the 1982 Census of Manufactures, Industry 3552, Textile Machinery, recorded employment of 19.4 thousand. The total value of shipments for establishments classified in this industry was \$1,059 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 25 percent below the 25.9 thousand reported in 1977. The leading States in employment in 1982 were South Carolina, North Carolina, New York, and Georgia, accounting for approximately 69 percent of the industry's 1982 employment. This represents a shift from 1977 when South Carolina, North Carolina, Massachusetts, and Rhode Island accounted for approximately 70 percent of the industry's employment.

Compared with 1981, employment decreased 15 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3552 shipped \$923 million of products primary to the industry, \$42 million of secondary products, and had \$94 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1977, this specialization ratio was 93 percent.

Establishments in this industry also accounted for 95 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 94 percent. The products primary to industry 3552, no matter in what industry they were produced, appear in table 6a and aggregate to \$966 million in current prices.

The total cost of materials and services used by establishments classified in the textile machinery industry amounted to \$424.1 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 24 percent of total value of shipments.

INDUSTRY 3553, WOODWORKING MACHINERY

This industry comprises establishments primarily engaged in the manufacture of machinery for sawmills, planing mills, cabinet and furniture makers, pattern makers, and veneer workers. Establishments primarily engaged in the manufacture of hand tools, such as planes, axes, drawknives, and hand saws are classified in industry group 342; and portable power driven hand tools in industry 3546.

In the 1982 Census of Manufactures, Industry 3553, Woodworking Machinery, recorded employment of 9.7 thousand. The total value of shipments for establishments classified in this industry was \$731 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 6 percent below the 10.3 thousand reported in 1977. The leading States in employment in 1982 were Tennessee, Ohio, Oregon, and North Carolina, accounting for approximately 40 percent of the industry's 1982 employment. Data for Ohio have been withheld to avoid disclosing data for individual companies. This represents a shift from 1977 when Tennessee, Oregon, Wisconsin, and Ohio accounted for approximately 39 percent of the industry's employment.

Compared with 1981, employment decreased 13 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3553 shipped \$616 million of products primary to the industry, \$62 million of secondary products, and had \$53 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 91 percent (specialization ratio). In 1977, this specialization ratio was 94 percent.

Establishments in this industry also accounted for 94 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 95 percent. The products primary to industry 3553, no matter in what industry they were produced, appear in table 6a and aggregate to \$657 million in current prices.

The total cost of materials and services used by establishments classified in the woodworking machinery industry amounted to \$332 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 11 percent of total value of shipments.

INDUSTRY 3554, PAPER INDUSTRIES MACHINERY

This industry comprises establishments primarily engaged in the manufacture of machinery for the pulp, paper, and paper product industries. Establishments primarily engaged in the manufacture of printing trades machinery are classified in industry 3555.

In the 1982 Census of Manufactures, Industry 3554, Paper Industries Machinery, recorded employment of 17.8 thousand.

The total value of shipments for establishments classified in this industry was \$1,387 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 8 percent above the 16.4 thousand reported in 1977. The leading States in employment in 1982 were Wisconsin, Pennsylvania, Massachusetts, and New York, accounting for approximately 60 percent of the industry's 1982 employment. This represents a shift from 1977 when Wisconsin, New York, New Jersey, and Massachusetts accounted for approximately 61 percent of the industry's employment.

Compared with 1981, employment decreased 7 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3554 shipped \$1,113 million of products primary to the industry, \$138 million of secondary products, and had \$136 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 89 percent (specialization ratio). In 1977, this specialization ratio was 84 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 90 percent. The products primary to industry 3554, no matter in what industry they were produced, appear in table 6a and aggregate to \$1,199 million in current prices.

The total cost of materials and services used by establishments classified in the paper industries machinery industry amounted to \$623 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

INDUSTRY 3555, PRINTING TRADES MACHINERY

This industry comprises establishments primarily engaged in the manufacture of machinery and equipment used by the printing and bookbinding trades. Establishments primarily engaged in the manufacture of textile printing machinery are classified in industry 3552.

In the 1982 Census of Manufactures, Industry 3555, Printing Trades Machinery, recorded employment of 28.2 thousand. The total value of shipments for establishments classified in this industry was \$2,257 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for

changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 11 percent above the 25.5 thousand reported in 1977. The leading States in employment in 1982 were Massachusetts, New York, New Jersey, and Illinois, accounting for approximately 46 percent of the industry's 1982 employment. This represents a shift from 1977 when Massachusetts, Illinois, New Jersey, and Pennsylvania accounted for approximately 45 percent of the industry's employment.

Compared with 1981, employment decreased 13 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3555 shipped \$1,994 million of products primary to the industry, \$52 million of secondary products, and had \$211 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 97 percent (specialization ratio). In 1977, this specialization ratio was also 97 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 92 percent. The products primary to industry 3555, no matter in what industry they were produced, appear in table 6a and aggregate to \$2,188 million in current prices.

The total cost of materials and services used by establishments classified in the printing trades machinery industry amounted to \$974 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.

This industry comprises establishments primarily engaged in the manufacture of special industry machinery, not elsewhere classified, such as smelting and refining equipment, cement making, clay working, cotton ginning, glass making, hat making, incandescent lamp making, leather working, paint making, rubber working, cigar and cigarette making, tobacco working, shoe making, and stone working machinery.

In the 1982 Census of Manufactures, Industry 3559, Special Industry Machinery, N.E.C., recorded employment of 74.9 thousand. The total value of shipments for establishments classified in this industry was \$5,351 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for

changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 6 percent above the 70.4 thousand reported in 1977. The leading States in employment in 1982 were California, Ohio, Massachusetts, and New York, accounting for approximately 41 percent of the industry's 1982 employment. This represents a shift from 1977 when Ohio, New York, Massachusetts, and Illinois accounted for approximately 40 percent of the industry's employment.

Compared with 1981, employment increased 1 percent. The 1981 data are based on the Bureau's annual survey of manufacturers (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3559 shipped \$4,583 million of products primary to the industry, \$450 million of secondary products, and had \$317 million of miscellaneous receipts. Thus, the ratio of primary products to

the total of both secondary and primary products shipped by establishments in the industry was 91 percent (specialization ratio). In 1977, this specialization ratio was 88 percent.

Establishments in this industry also accounted for 86 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 85 percent. The products primary to industry 3559, no matter in what industry they were produced, appear in table 6a and aggregate to \$5,354 million in current prices.

The total cost of materials and services used by establishments classified in the special industry machinery, n.e.c., industry amounted to \$2,263 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 13 percent of total value of shipments.

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year ¹	Com- panies ² (no.)	All establishments ³		All employees		Production workers			Value added by manufac- ture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expendi- tures (million dollars)	Ratios		
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					Speci- aliza- tion (per- cent)	Cover- age (per- cent)	
INDUSTRY 3551, FOOD PRODUCTS MACHINERY															
1982 Census-----	703	748	316	32.7	895.3	20.8	40.1	390.3	1 355.7	957.2	2 320.8	55.0	700.6	93	91
1981 ASM-----	(NA)	(NA)	(NA)	35.4	694.2	22.8	44.8	396.5	1 380.7	992.4	2 374.0	45.2	633.3	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	37.4	680.9	24.2	47.5	388.0	1 429.2	989.4	2 372.5	51.1	643.7	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	38.9	640.0	25.4	51.0	373.9	1 312.6	992.9	2 266.1	61.3	592.6	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	40.1	608.2	25.2	49.4	345.5	1 265.6	929.5	2 167.8	60.4	584.8	(NA)	(NA)
1977 Census-----	686	740	315	36.3	522.1	22.8	45.4	292.6	1 056.4	765.3	1 786.8	46.9	499.4	90	92
1976 ASM-----	(NA)	(NA)	(NA)	34.2	452.2	21.8	44.1	251.2	842.7	665.3	1 542.5	32.2	420.2	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	35.6	442.9	22.4	47.1	250.3	851.3	656.2	1 514.4	33.7	441.3	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	40.5	464.8	26.1	54.9	266.2	892.9	674.0	1 490.9	36.8	466.2	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	36.1	386.1	23.2	47.6	224.7	749.3	517.1	1 241.4	31.3	316.8	(NA)	(NA)
1972 Census-----	636	688	290	31.9	315.9	20.8	40.7	179.7	605.2	411.7	1 000.1	21.8	253.1	90	89
1971 ASM-----	(NA)	(NA)	(NA)	33.0	288.7	21.2	42.3	161.9	551.6	360.7	922.7	18.7	222.4	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	32.9	286.3	21.7	44.7	165.0	548.7	371.4	918.7	36.5	230.3	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	33.5	280.2	22.4	46.1	163.8	550.2	355.4	890.8	16.5	224.5	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	33.0	258.8	21.9	44.2	149.1	512.0	336.1	840.4	17.9	205.1	(NA)	(NA)
1967 Census-----	611	642	280	32.6	249.4	22.0	45.2	147.2	502.9	337.9	830.2	22.0	198.0	88	86
INDUSTRY 3552, TEXTILE MACHINERY															
1982 Census-----	512	551	197	19.4	322.9	12.8	23.9	184.5	641.4	424.1	1 059.0	46.1	298.6	96	95
1981 ASM-----	(NA)	(NA)	(NA)	22.9	386.5	15.7	30.8	214.8	776.7	472.1	1 245.0	38.4	279.9	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	24.3	352.2	18.8	33.7	210.7	715.3	477.6	1 170.5	33.0	262.6	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	24.1	323.4	18.8	32.7	195.2	656.8	413.6	1 055.2	33.2	240.2	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	25.0	320.4	18.8	32.9	178.5	559.5	428.0	996.1	50.1	240.3	(NA)	(NA)
1977 Census-----	599	638	217	25.9	300.8	18.3	38.3	185.3	539.4	388.9	950.0	32.2	233.5	93	94
1976 ASM-----	(NA)	(NA)	(NA)	28.5	315.9	20.7	40.9	195.9	580.1	412.6	1 006.0	28.3	266.4	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	28.6	288.4	19.8	39.4	172.4	555.9	387.7	949.2	27.4	287.2	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	35.2	337.7	25.8	53.5	210.9	667.6	439.1	1 082.4	37.7	326.1	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	33.0	292.8	23.9	48.5	163.7	564.1	364.9	910.2	27.4	271.1	(NA)	(NA)
1972 Census-----	535	579	225	32.7	271.0	23.3	47.5	168.5	487.9	340.2	823.7	27.6	231.0	94	96
1971 ASM-----	(NA)	(NA)	(NA)	32.1	253.1	22.8	45.4	157.6	434.6	323.2	767.5	23.9	221.6	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	37.2	277.5	26.7	55.5	175.9	477.5	337.1	806.8	22.0	233.4	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	38.8	282.0	28.4	60.6	178.9	473.9	353.5	812.6	24.0	228.5	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	37.3	254.7	27.1	58.7	164.0	432.6	303.3	720.2	24.0	202.8	(NA)	(NA)
1967 Census-----	524	560	239	39.7	253.3	29.4	62.5	169.1	404.1	309.2	711.7	22.2	185.1	94	95
INDUSTRY 3553, WOODWORKING MACHINERY															
1982 Census-----	267	279	96	9.7	173.7	5.9	10.9	91.3	387.4	332.2	730.7	20.2	148.7	91	94
1981 ASM-----	(NA)	(NA)	(NA)	11.2	195.0	7.5	14.1	106.7	461.7	386.3	835.2	14.1	161.7	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	11.2	176.7	7.7	14.8	102.4	422.6	333.8	750.1	(S)	144.0	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	11.7	174.5	8.4	16.1	104.0	418.5	330.2	727.7	18.5	142.1	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	11.2	162.2	8.0	16.2	97.6	363.2	315.6	676.1	11.9	137.0	(NA)	(NA)
1977 Census-----	290	301	105	10.3	131.2	7.4	14.7	81.9	317.8	276.0	585.6	13.8	111.6	94	95
1976 ASM-----	(NA)	(NA)	(NA)	16.9	180.0	12.1	22.5	111.9	414.7	399.6	821.0	25.2	163.3	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	15.7	166.5	11.6	21.2	99.6	410.9	368.9	773.6	24.1	164.8	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	16.7	170.6	12.4	24.9	111.1	422.4	346.3	742.5	19.5	169.5	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	14.1	134.8	9.9	19.9	80.6	302.3	262.1	557.3	10.7	112.3	(NA)	(NA)
1972 Census-----	229	242	109	13.7	123.9	9.4	19.2	73.9	285.1	219.6	495.2	12.4	101.8	90	91
1971 ASM-----	(NA)	(NA)	(NA)	13.3	112.4	9.0	18.0	65.7	244.9	167.6	413.6	8.9	87.3	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	13.0	103.9	8.7	17.6	61.0	235.3	149.1	384.6	8.6	82.2	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	14.2	108.1	9.9	20.3	65.9	242.5	166.0	400.9	8.6	86.6	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	13.4	93.7	9.3	19.1	56.4	216.6	142.3	356.5	7.7	75.7	(NA)	(NA)
1967 Census-----	232	239	88	12.7	83.9	8.8	17.6	50.4	192.8	127.1	314.4	8.2	72.1	83	87
INDUSTRY 3554, PAPER INDUSTRIES MACHINERY															
1982 Census-----	230	253	126	17.8	405.8	10.0	20.2	201.5	762.6	622.5	1 387.4	29.4	360.3	89	93
1981 ASM-----	(NA)	(NA)	(NA)	19.1	404.4	10.8	21.8	203.8	685.3	674.0	1 382.3	45.6	357.0	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	19.6	385.0	11.3	22.7	197.7	651.2	671.6	1 322.8	55.6	377.8	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	19.5	349.7	11.1	22.0	181.3	641.1	601.6	1 207.6	33.2	373.6	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	17.2	285.5	10.1	19.5	142.9	567.7	438.8	938.9	26.3	284.7	(NA)	(NA)
1977 Census-----	193	213	103	16.4	247.5	9.3	18.8	123.8	464.9	357.8	826.9	17.2	220.2	84	90
1976 ASM-----	(NA)	(NA)	(NA)	18.0	251.7	10.6	21.1	131.5	445.2	413.9</td					

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year ¹	Com- panies ² (no.)	All establishments ³		All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	End-of- year inven- tories ⁴ (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spec- ializa- tion (per- cent)	Cover- age (per- cent)
INDUSTRY 3555, PRINTING TRADES MACHINERY—Con.															
1972 Census-----	523	574	173	23.9	249.4	15.3	30.3	137.3	503.6	317.2	823.5	16.1	243.6	97	91
1971 ASM-----	(NA)	(NA)	(NA)	23.7	223.5	14.6	29.5	125.8	406.0	287.8	708.6	11.9	249.3	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	27.1	244.3	17.9	37.3	147.1	469.0	310.6	755.2	15.2	257.8	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	30.4	266.8	21.1	43.7	166.9	483.9	358.8	827.7	17.3	243.1	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	32.2	267.0	21.6	44.7	160.6	516.7	375.6	870.1	33.3	240.6	(NA)	(NA)
1967 Census-----	485	522	165	29.2	239.6	20.1	42.2	149.2	458.7	324.8	752.3	32.9	217.2	98	94
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.															
1982 Census-----	1 754	1 826	693	74.9	1 557.6	43.7	84.5	794.7	3 015.1	2 263.2	5 351.1	173.4	1 424.4	91	86
1981 ASM-----	(NA)	(NA)	(NA)	73.9	1 458.8	44.5	88.2	748.0	2 845.2	2 249.2	5 007.9	146.0	1 272.1	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	77.8	1 399.5	47.7	94.2	738.9	2 767.8	2 178.1	4 914.7	142.9	1 196.2	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	76.8	1 275.9	49.2	99.7	716.7	2 636.3	1 984.1	4 505.7	151.9	1 127.1	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	74.4	1 168.9	46.4	92.7	651.3	2 340.1	1 838.6	4 112.1	136.6	961.7	(NA)	(NA)
1977 Census-----	1 544	1 600	547	70.4	1 043.3	44.0	88.5	572.6	2 096.1	1 593.4	3 622.0	86.8	888.6	88	85
1976 ASM-----	(NA)	(NA)	(NA)	76.1	1 056.7	47.1	98.3	571.5	2 297.7	1 797.9	4 121.3	86.5	975.0	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	76.0	967.0	46.8	95.6	527.8	2 073.3	1 734.5	3 818.4	76.3	995.7	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	80.6	965.6	50.2	104.4	525.5	2 071.0	1 564.7	3 505.7	107.1	1 002.4	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	80.4	872.6	51.0	105.1	490.4	1 814.1	1 345.2	3 111.0	94.5	801.2	(NA)	(NA)
1972 Census-----	1 310	1 384	523	72.6	734.7	45.1	91.5	393.8	1 596.1	1 093.9	2 616.9	73.8	640.9	82	81
1971 ASM-----	(NA)	(NA)	(NA)	66.5	623.4	41.5	83.0	344.8	1 044.7	797.6	1 869.7	57.0	485.7	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	71.2	629.6	45.6	93.3	360.7	1 124.2	891.0	1 991.0	61.0	503.5	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	70.7	603.0	44.7	93.9	339.4	1 240.4	887.9	2 076.4	51.5	478.0	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	71.2	588.2	44.6	94.3	323.6	1 090.0	853.5	1 951.6	50.3	450.8	(NA)	(NA)
1967 Census-----	1 085	1 129	486	71.3	571.2	46.1	97.8	323.0	1 038.4	818.1	1 833.0	75.4	447.4	82	81

¹In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1967, see 1967 Census of Manufactures, vol. II, table 1 of the Industry chapter.

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during year.

⁴Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Up to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown above and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown below:

Industries	End-of-1981 inventories (million dollars)	End-of-1982 inventories (million dollars)	1982 value added by manufacture (million dollars)
Industry 3551, Food products machinery-----	662.4	693.8	1 353.9
Industry 3552, Textile Machinery-----	273.5	274.7	643.0
Industry 3553, Woodworking machinery-----	153.6	136.1	389.7
Industry 3554, Paper industries machinery-----	335.8	325.1	760.5
Industry 3555, Printing trades machinery-----	571.0	528.4	1 234.9
Industry 3559, Special industry machinery, n.e.c.-----	1 386.7	1 315.0	3 040.5

See Inventories in appendixes for explanation of the difference between end-of-1981 inventory figure shown in table and corresponding figure shown in footnote.

⁵Estimate for new capital expenditures has associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3551, FOOD PRODUCTS MACHINERY									
1982 Census-----	21 263	63	1 947	9.73	41	71	41 459	51	33.81
1981 ASM-----	19 610	64	1 973	8.89	42	71	39 003	50	30.96
1980 ASM-----	18 206	65	1 963	8.17	42	70	38 214	48	30.09
1979 ASM-----	16 452	65	2 008	7.33	44	72	33 743	49	25.74
1978 ASM-----	15 167	63	1 960	6.99	43	71	31 561	48	25.62
1977 Census-----	14 401	62	1 991	6.45	42	72	29 136	49	23.28
1976 ASM-----	13 222	64	2 023	5.70	43	72	24 640	54	19.11
1975 ASM-----	12 441	63	2 103	5.31	43	73	23 913	52	18.07
1974 ASM-----	11 477	64	2 103	4.85	45	76	22 047	52	16.26
1973 ASM-----	10 695	64	2 052	4.72	42	73	20 756	52	15.74
1972 Census-----	9 903	65	1 976	4.42	41	73	18 972	52	14.87
1971 ASM-----	8 748	64	1 995	3.83	39	70	16 715	52	13.04
1970 ASM-----	8 702	66	2 060	3.69	40	72	16 678	52	12.28
1969 ASM-----	8 364	67	2 058	3.55	40	71	16 424	51	11.93
1968 ASM-----	7 842	66	2 018	3.37	40	71	15 515	51	11.58
1967 Census-----	7 650	67	2 055	3.26	41	71	15 426	50	11.13

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3552, TEXTILE MACHINERY									
1982 Census.....	16 644	66	1 867	7.72	40	71	33 062	50	26.84
1981 ASM.....	18 004	69	1 982	6.97	38	67	33 917	47	25.22
1980 ASM.....	14 494	89	2 006	6.25	41	71	29 436	49	21.23
1979 ASM.....	13 419	70	1 946	5.97	39	70	27 253	49	20.09
1978 ASM.....	12 818	87	1 958	5.43	43	75	22 380	57	17.01
1977 Census.....	11 590	70	1 984	5.10	41	73	20 800	56	14.88
1978 ASM.....	11 084	73	1 976	4.79	41	72	20 354	54	14.18
1975 ASM.....	10 084	69	1 990	4.38	41	71	19 437	52	14.11
1974 ASM.....	9 594	73	2 074	3.94	41	72	18 966	51	12.48
1973 ASM.....	8 867	72	2 029	3.79	40	72	17 094	52	11.63
1972 Census.....	8 287	71	2 039	3.55	41	74	14 920	56	10.27
1971 ASM.....	7 885	71	1 991	3.47	42	75	13 539	58	9.57
1970 ASM.....	7 460	72	2 079	3.17	42	76	12 836	58	8.60
1969 ASM.....	7 268	73	2 134	2.95	44	78	12 214	60	7.82
1968 ASM.....	8 828	73	2 166	2.79	42	77	11 598	59	7.37
1987 Census.....	8 380	74	2 126	2.71	43	79	10 179	63	6.47
INDUSTRY 3553, WOODWORKING MACHINERY									
1982 Census.....	17 907	81	1 847	8.38	45	69	39 938	45	35.54
1981 ASM.....	17 411	67	1 880	7.57	46	70	41 223	42	32.74
1980 ASM.....	15 777	69	1 922	6.92	45	68	37 732	42	28.55
1979 ASM.....	14 915	72	1 917	6.46	45	69	35 769	42	25.99
1978 ASM.....	14 482	71	2 025	6.02	47	71	32 429	45	22.42
1977 Census.....	12 700	72	1 982	5.57	47	70	30 758	41	21.62
1976 ASM.....	10 651	72	1 860	4.97	49	71	24 538	43	18.43
1975 ASM.....	10 605	74	1 828	4.70	48	69	26 172	41	19.38
1974 ASM.....	10 216	74	2 008	4.46	47	70	25 293	40	16.98
1973 ASM.....	9 560	70	2 010	4.05	47	71	21 440	45	15.19
1972 Census.....	9 044	69	2 043	3.85	44	69	20 810	43	14.85
1971 ASM.....	8 451	68	2 000	3.65	41	68	18 414	46	13.61
1970 ASM.....	7 992	87	2 023	3.47	39	66	18 100	44	13.37
1969 ASM.....	7 613	70	2 051	3.25	41	68	17 077	45	11.95
1968 ASM.....	6 993	89	2 054	2.95	40	66	16 164	43	11.34
1987 Census.....	8 606	69	2 000	2.86	40	67	15 181	44	10.95
INDUSTRY 3554, PAPER INDUSTRIES MACHINERY									
1982 Census.....	22 798	58	2 020	9.98	45	74	42 843	53	37.75
1981 ASM.....	21 173	57	2 000	9.44	49	78	35 880	59	31.73
1980 ASM.....	19 643	58	2 009	8.71	51	80	33 224	59	28.69
1979 ASM.....	17 933	57	1 982	8.24	50	79	32 877	55	29.14
1978 ASM.....	16 599	59	1 931	7.33	47	77	33 006	50	29.11
1977 Census.....	15 137	57	2 016	6.56	43	73	28 434	53	24.66
1976 ASM.....	13 963	59	1 991	6.23	48	77	24 733	57	21.10
1975 ASM.....	12 460	61	1 930	5.58	49	78	21 893	57	18.44
1974 ASM.....	11 870	62	2 108	4.91	51	83	19 907	59	15.26
1973 ASM.....	11 313	60	1 970	4.97	45	80	20 530	55	17.48
1972 Census.....	10 392	59	2 067	4.34	43	79	16 601	63	13.66
1971 ASM.....	9 171	57	2 021	4.01	46	77	15 782	58	13.69
1970 ASM.....	8 870	58	2 103	3.60	48	77	15 930	56	13.10
1969 ASM.....	8 550	60	2 159	3.54	45	76	15 648	55	12.02
1968 ASM.....	8 348	68	2 090	3.79	44	75	14 717	57	10.41
1967 Census.....	8 099	69	2 130	3.59	48	79	13 305	61	9.11
INDUSTRY 3555, PRINTING TRADES MACHINERY									
1982 Census.....	21 170	55	2 013	9.42	43	70	43 663	48	39.46
1981 ASM.....	19 354	57	2 108	8.24	45	71	40 283	48	33.40
1980 ASM.....	18 163	60	2 091	7.49	47	74	36 532	50	29.35
1979 ASM.....	17 242	63	2 124	6.68	44	71	37 287	46	27.66
1978 ASM.....	15 897	63	2 055	6.49	43	69	36 791	43	28.54
1977 Census.....	14 470	61	2 029	6.09	42	70	31 108	47	25.03
1978 ASM.....	13 333	60	1 985	5.61	43	70	26 409	50	22.34
1975 ASM.....	12 177	82	1 914	5.34	43	71	23 461	52	19.73
1974 ASM.....	11 885	82	1 934	5.04	43	75	23 389	51	19.55
1973 ASM.....	11 163	64	2 043	4.58	39	69	23 960	47	18.28
1972 Census.....	10 435	84	1 980	4.53	39	69	21 071	50	16.62
1971 ASM.....	9 430	62	2 021	4.26	41	72	17 131	55	13.76
1970 ASM.....	9 015	66	2 084	3.94	41	73	17 306	52	12.57
1969 ASM.....	8 778	69	2 071	3.82	43	76	15 918	55	11.07
1968 ASM.....	8 292	87	2 069	3.59	43	74	16 047	52	11.56
1987 Census.....	8 205	69	2 100	3.54	43	75	15 709	52	10.87
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.									
1982 Census.....	20 798	58	1 934	9.40	42	71	40 255	52	35.68
1981 ASM.....	19 740	60	1 982	8.48	45	74	38 436	51	32.20
1980 ASM.....	17 988	81	1 975	7.84	44	73	35 576	51	29.38
1979 ASM.....	18 613	84	2 026	7.19	44	72	34 327	48	26.44
1978 ASM.....	15 711	82	1 998	7.03	45	73	31 453	50	25.24

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.—Con.									
1977 Census-----	14 812	62	2 009	6.46	44	73	29 760	50	23.66
1978 ASM-----	13 886	62	2 087	5.81	44	69	30 193	46	23.37
1975 ASM-----	12 724	62	2 043	5.52	45	71	27 280	47	21.69
1974 ASM-----	11 980	62	2 080	5.03	45	72	25 695	47	19.84
1973 ASM-----	10 853	63	2 061	4.67	43	71	22 563	46	17.26
1972 Census-----	10 120	82	2 029	4.30	42	70	21 985	48	17.44
1971 ASM-----	9 374	62	2 000	4.15	43	76	15 710	60	12.59
1970 ASM-----	8 843	64	2 046	3.87	45	78	15 789	56	12.05
1969 ASM-----	8 529	63	2 101	3.81	43	72	17 545	49	13.21
1968 ASM-----	8 261	63	2 114	3.43	44	74	15 309	54	11.56
1967 Census-----	8 011	65	2 121	3.30	45	76	14 564	55	10.62

Note: For qualifications of data, see footnotes on table 1a.

Table 2. Industry Statistics for Selected States: 1982 and 1977

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982										1977			
	All establishments ²		All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ³ (1,000)	Value added by manufacture (million dollars)	
	E ¹	Total (no.)	With 20 employees or more (no.)	Number ³ (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)							
INDUSTRY 3551, FOOD PRODUCTS MACHINERY														
United States-----	-	748	316	32.7	695.3	20.6	40.1	390.3	1 355.7	957.2	2 320.8	55.0	36.3	1 056.4
California-----	E1	127	49	3.8	88.9	2.4	4.6	50.6	162.9	102.6	265.7	6.6	4.8	147.6
Colorado-----	E2	9	1	.2	3.9	.1	.2	2.2	6.6	5.3	12.1	.5	(NA)	(NA)
Connecticut-----	-	10	4	.3	6.0	.2	.4	3.0	18.4	7.3	24.2	.8	21.2	
Florida-----	E1	32	12	1.4	27.3	.7	1.4	12.5	53.0	38.4	89.2	3.1	1.0	31.1
Georgia-----	-	25	15	1.5	28.0	.9	1.8	14.2	82.8	39.7	100.4	1.6	1.4	30.9
Illinois-----	-	71	28	3.3	74.8	2.0	3.8	40.8	146.6	102.8	251.8	8.6	3.6	110.8
Indiana-----	-	15	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	8.8	28.1
Iowa-----	-	11	6	1.2	28.8	.6	1.1	13.8	68.9	23.4	93.6	(D)	1.2	40.3
Kansas-----	-	12	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.7	18.8
Kentucky-----	-	6	6	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	19.0
Louisiana-----	-	5	2	.4	7.7	.3	.7	5.9	9.1	5.5	14.9	.1	.6	6.3
Maryland-----	-	11	5	.7	14.1	.4	.8	9.2	34.2	28.2	61.4	.2	1.0	38.6
Massachusetts-----	-	17	6	.9	17.8	.5	1.2	9.9	41.4	15.5	56.0	1.0	1.1	33.7
Michigan-----	-	20	6	1.2	33.8	.7	1.5	17.8	55.5	30.1	85.7	.2	.7	15.4
Minnesota-----	E1	20	8	.7	15.5	.5	1.0	9.8	30.1	19.4	50.8	1.4	.8	23.2
Missouri-----	-	18	11	.9	21.3	.5	1.0	11.7	42.8	39.7	81.4	.8	.8	29.8
Nebraska-----	-	3	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Nevada-----	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
New Jersey-----	E2	25	8	.7	13.8	.4	.9	8.2	24.5	20.7	46.0	1.1	.8	23.1
New York-----	E2	46	20	1.4	28.2	.9	1.6	14.9	53.9	56.5	112.8	4.3	1.5	42.3
North Carolina-----	-	12	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	6.5
Ohio-----	-	46	25	3.5	73.6	2.4	4.5	40.3	126.6	135.8	262.9	6.2	4.3	127.4
Oregon-----	E4	14	3	.3	5.4	.2	.3	2.9	9.0	5.4	14.4	1.1	.3	8.2
Pennsylvania-----	-	33	14	1.2	24.3	.7	1.5	13.4	54.2	28.7	79.3	3.3	2.1	54.1
Texas-----	E1	38	17	1.1	17.0	.8	1.8	11.3	31.6	27.3	58.9	1.9	1.0	23.5
Virginia-----	-	8	5	.3	5.5	.2	.3	3.1	11.1	7.7	19.3	.4	.6	16.7
Washington-----	E1	25	6	.5	11.6	.3	.7	7.2	23.1	13.9	38.0	.7	BB	(D)
Wisconsin-----	-	44	22	3.3	70.7	2.1	4.1	45.1	132.4	93.4	235.2	3.3	4.2	106.7
INDUSTRY 3552, TEXTILE MACHINERY														
United States-----	E2	551	197	19.4	322.9	12.8	23.9	184.5	641.4	424.1	1 059.0	46.1	25.9	539.4
Connecticut-----	-	8	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	4.5
Georgia-----	E1	37	15	1.1	17.0	.8	1.5	9.8	32.0	21.9	55.4	1.5	1.3	24.4
Illinois-----	E1	5	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Massachusetts-----	E2	41	16	1.0	17.2	.6	1.1	9.1	31.3	25.7	56.3	1.1	3.2	66.8
Missouri-----	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New Hampshire-----	E2	6	4	.3	4.1	.2	.4	2.8	8.5	3.5	11.4	.3	.5	11.3
New Jersey-----	E3	41	7	.6	11.7	.4	.8	6.4	22.1	18.8	40.1	.7	.7	14.9
New York-----	E6	43	15	1.2	21.8	.7	1.4	12.2	46.8	26.4	75.0	8.8	1.3	38.3
North Carolina-----	E2	129	54	4.7	73.4	3.1	5.7	40.9	184.2	103.1	263.6	8.8	5.8	113.3
Pennsylvania-----	E2	26	9	.6	9.6	.4	.8	5.4	18.3	10.5	26.6	(D)	1.4	22.5
Rhode Island-----	E2	21	5	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.5	40.4
South Carolina-----	E1	91	44	6.4	100.5	4.4	7.9	60.3	184.1	127.3	313.4	(D)	FF	(D)
Tennessee-----	-	10	5	.6	8.8	.4	.8	6.0	18.5	15.9	35.2	(D)	.8	16.4

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977		
	All establishments ²		All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ³ (1,000)	Value added by manufacture (million dollars)	
	E ¹	Total (no.)	With 20 employees or more (no.)	Number ³ (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)							
INDUSTRY 3553, WOODWORKING MACHINERY														
United States	E1	279	96	9.7	173.7	5.9	10.9	91.3	387.4	332.2	730.7	20.2	10.3	317.8
Alabama	-	7	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Arkansas	-	4	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	4.9
California	E3	26	6	.3	5.8	.2	.4	4.1	8.5	7.6	15.9	(D)	.5	14.9
Florida	E1	4	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Illinois	E4	15	4	.4	7.0	.2	.4	3.5	13.9	10.1	24.3	.5	.4	10.9
Indiana	E1	9	4	.3	5.4	.2	.3	2.3	8.0	5.3	13.0	.6	.2	5.8
Michigan	-	15	4	.3	6.7	.2	.2	3.3	11.0	8.6	19.5	.2	.4	11.3
Minnesota	-	8	4	.5	9.8	.3	.6	5.2	21.2	15.4	36.8	.7	.4	14.7
Mississippi	-	2	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Missouri	-	5	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New York	E2	8	4	.2	3.5	.1	.2	1.8	7.9	5.4	12.6	.1	.2	6.3
North Carolina	-	20	6	.7	9.7	.5	.9	6.2	31.7	34.7	66.8	.6	.6	8.5
Ohio	-	7	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oregon	E1	39	18	.9	18.6	.5	1.0	8.7	29.7	29.5	58.2	1.2	1.3	39.5
Pennsylvania	-	12	6	.5	7.8	.3	.6	4.5	18.4	13.5	36.0	(D)	.5	18.1
Tennessee	-	9	4	1.1	17.5	.7	1.2	10.4	40.9	52.1	95.3	2.8	EE	(D)
Vermont	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Washington	E4	14	5	.6	14.7	.4	.7	8.6	24.6	18.5	41.7	.6	.6	20.9
Wisconsin	-	15	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.7	19.3
INDUSTRY 3554, PAPER INDUSTRIES MACHINERY														
United States	-	253	126	17.8	405.8	10.0	20.2	201.5	762.6	622.5	1 387.4	29.4	16.4	464.9
Alabama	-	9	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	2.7
Georgia	-	7	3	.3	5.9	.2	.3	2.7	10.1	9.1	19.7	.5	(NA)	(NA)
Indiana	E2	11	4	.2	3.9	.1	.3	2.2	6.8	3.9	10.7	(D)	(NA)	(NA)
Kansas	-	4	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Maryland	-	3	3	.6	14.5	.3	.6	7.2	22.2	12.7	38.3	.5	CC	(D)
Massachusetts	E1	29	18	2.0	43.2	1.2	2.9	19.9	80.3	69.1	152.6	1.9	1.9	46.7
Michigan	E1	10	4	.3	7.3	.2	.4	3.7	13.9	19.0	33.6	.4	.3	8.2
New Hampshire	-	5	4	1.3	27.9	.7	1.3	15.7	40.5	43.1	81.7	1.8	EE	(D)
New Jersey	E1	15	8	1.4	32.3	.7	1.6	17.4	52.8	33.1	85.4	(D)	1.9	46.0
New York	-	27	11	1.7	39.5	.9	1.8	18.0	74.7	54.6	129.8	3.4	2.1	54.4
Ohio	-	14	7	.7	16.2	.4	.7	8.2	35.0	19.9	54.5	.6	.7	25.8
Oregon	-	9	5	.2	8.0	.1	.3	3.0	8.8	7.9	16.6	(D)	AA	(D)
Pennsylvania	-	17	10	2.1	42.7	1.2	2.3	22.3	78.2	57.7	134.1	3.7	1.0	29.3
Virginia	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Washington	-	5	2	.4	9.6	.3	.5	6.4	13.9	13.7	28.8	(D)	.5	14.2
Wisconsin	-	32	23	4.8	120.8	2.6	5.0	55.1	239.0	223.0	454.6	4.4	4.1	143.7
INDUSTRY 3555, PRINTING TRADES MACHINERY														
United States	-	570	215	28.2	597.0	15.5	31.2	293.9	1 231.3	974.1	2 256.9	72.2	25.5	793.6
California	E1	53	15	1.5	31.7	.7	1.4	12.9	62.6	36.2	101.3	3.3	1.2	32.0
Connecticut	-	15	6	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.1	42.5
Florida	E1	22	4	.4	7.5	.2	.5	4.0	16.5	12.2	29.0	.6	CC	(D)
Georgia	-	9	3	.2	3.0	.1	.3	1.9	5.7	5.0	10.6	.2	(NA)	(NA)
Illinois	-	70	34	2.6	58.9	1.5	3.3	30.3	117.6	91.4	213.4	5.1	2.8	87.0
Indiana	E1	9	4	.2	4.5	.1	.2	2.1	8.7	4.5	13.2	.5	(NA)	(NA)
Iowa	-	2	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kansas	-	8	5	.8	15.9	.4	.8	8.4	41.0	18.2	60.6	.8	.7	22.4
Kentucky	-	6	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Massachusetts	-	36	22	5.1	104.5	2.1	4.4	40.3	92.8	184.9	282.4	19.5	3.7	118.1
Michigan	-	20	5	.5	11.8	.3	.6	6.0	19.8	16.8	36.8	.9	1.0	27.9
Missouri	E2	18	6	6	11.2	.4	.6	5.2	21.2	13.9	34.0	1.1	.6	14.9
New Hampshire	-	4	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.7	10.4
New Jersey	-	47	24	2.7	56.4	1.4	2.8	28.1	119.9	75.5	209.4	9.7	2.8	105.5
New York	E1	85	23	2.5	50.8	1.6	3.3	30.2	117.9	86.6	207.6	6.8	2.2	69.9
Ohio	-	29	12	2.5	49.9	1.3	2.2	24.5	99.6	49.8	153.1	4.3	2.0	56.0
Oklahoma	-	6	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Pennsylvania	-	29	15	2.2	48.9	1.5	3.2	29.8	128.7	97.4	222.2	5.2	2.6	67.1
Texas	-	21	8	1.2	27.0	.6	1.2	11.0	54.7	65.5	128.0	2.3	.8	35.2
Virginia	-	8	2	.2	4.4	.1	.2	2.0	7.5	9.1	17.3	(D)	.4	9.3
Washington	E1	5	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Wisconsin	E1	21	10	1.0	20.2	.6	1.3	9.6	34.4	33.5	68.9	1.9	CC	(D)

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977	
	All establishments ²		All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ³ (1,000)	Value added by manufacture (million dollars)
	E ¹	Total (no.)	With 20 employees or more (no.)	Number ³ (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)						
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.													
United States -----	E1	1 826	893	74.9	1 557.8	43.7	84.5	794.7	3 015.1	2 263.2	5 351.1	173.4	70.4
Alabama -----	E3	13	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC (D)
Arizona -----	E1	19	4	.5	10.5	.3	.5	4.2	20.1	18.8	37.4	1.6	.2 3.1
Arkansas -----	-	7	3	.5	10.2	.4	.8	7.0	16.9	35.8	39.4	1.0	BB (D)
California -----	-	248	94	10.7	233.4	5.7	10.7	102.1	427.9	344.5	776.5	38.0	4.3 137.2
Connecticut -----	-	62	25	4.0	82.3	2.2	4.3	39.5	137.3	111.3	256.1	8.9	3.2 89.7
Delaware -----	-	6	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC (D)
Florida -----	E3	43	9	.9	14.9	.6	1.2	8.3	26.1	19.6	45.9	1.2	.8 16.5
Georgia -----	E2	32	9	1.1	17.4	.6	1.1	8.4	36.2	21.4	59.4	.8	1.0 11.9
Illinois -----	-	106	41	3.5	74.6	2.1	4.1	40.0	142.7	87.8	239.6	10.5	5.0 157.8
Indiana -----	-	53	17	2.5	50.5	1.5	3.2	28.2	102.7	94.7	203.2	3.0	2.8 92.1
Iowa -----	E1	20	8	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC (D)
Kansas -----	E1	14	7	.6	12.5	.4	.7	6.0	34.8	20.9	56.2	1.9	CC (D)
Kentucky -----	E1	16	9	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB (D)
Louisiana -----	E1	9	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3 6.2
Maryland -----	E1	12	5	.9	19.0	.4	.7	7.7	27.9	12.9	43.3	3.1	1.5 46.2
Massachusetts -----	E1	97	48	6.0	123.8	3.7	8.3	67.8	277.4	188.5	470.3	12.9	5.4 179.6
Michigan -----	E1	115	47	4.2	94.5	2.5	5.0	51.2	173.7	132.3	313.4	9.3	4.4 139.6
Minnesota -----	E1	29	10	1.1	23.7	.6	1.0	12.3	46.6	31.8	80.6	2.8	.9 24.2
Missouri -----	E2	23	5	.4	7.1	.3	.5	3.8	12.6	11.7	24.7	.6	.3 8.1
New Hampshire -----	-	19	10	.5	10.8	.3	.6	5.5	21.6	23.9	49.3	1.3	(NA) (NA)
New Jersey -----	E2	142	57	5.5	114.8	2.9	5.6	53.4	207.3	136.6	351.0	8.4	4.9 131.9
New York -----	-	115	40	5.6	121.4	3.8	6.5	77.6	283.4	127.7	423.1	16.8	5.6 193.7
North Carolina -----	E2	30	11	.8	13.3	.6	1.0	7.4	28.7	20.7	48.3	1.3	.6 16.5
Ohio -----	E1	158	78	8.6	183.6	5.2	9.6	97.6	317.0	283.4	627.1	15.3	11.7 322.6
Oklahoma -----	-	29	15	2.1	44.8	1.1	2.1	19.4	98.9	70.1	168.3	2.8	1.6 63.4
Oregon -----	E1	14	3	.2	3.6	.1	.2	1.7	6.1	4.7	11.0	.2	.5 17.8
Pennsylvania -----	E1	104	38	4.0	84.5	2.3	4.5	39.1	160.0	121.5	277.4	7.3	4.3 122.7
Rhode Island -----	E1	24	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB (D)
South Carolina -----	E1	8	1	.2	3.7	.1	.4	2.8	8.8	3.6	12.2	(D)	(NA) (NA)
Tennessee -----	E1	23	9	.6	14.0	.4	.9	8.4	23.9	29.0	49.8	2.6	BB (D)
Texas -----	E1	97	28	2.8	52.8	1.7	3.2	26.4	100.2	96.7	197.8	6.4	2.7 83.9
Utah -----	E1	5	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA) (NA)
Virginia -----	-	11	5	.5	9.9	.3	.5	4.3	23.5	15.6	38.5	.9	.8 14.7
Washington -----	E4	29	8	.9	20.5	.5	1.0	10.1	38.7	26.2	67.3	1.3	EE (D)
Wisconsin -----	-	51	21	1.8	37.3	1.0	1.9	17.3	73.1	67.2	142.9	3.2	1.7 63.1

Note: For qualifications of data, see footnotes on table 1a.

¹Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

²Includes establishments with payroll at any time during year.

³Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

⁴Beginning in 1982, all respondents were requested to report their inventories at cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, data for inventories and value added by manufacture are not comparable to prior-year data.

Table 3a. Summary Statistics for the Industry: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Food products machinery (SIC 3551)	Textile machinery (SIC 3552)	Woodworking machinery (SIC 3553)	Paper industries machinery (SIC 3554)	Printing trades machinery (SIC 3555)	Special industry machinery, n.e.c. (SIC 3559)
Companies ¹ -----	number-----	703	512	267	230	5007
All establishments ² -----	do-----	748	551	279	253	570
With 1 to 19 employees -----	do-----	432	354	183	127	355
With 20 to 99 employees -----	do-----	224	156	70	83	162
With 100 employees or more -----	do-----	92	41	26	43	53
All employees: -----						
Average for year -----	1,000-----	32.7	19.4	9.7	17.8	28.2
Annual payroll ³ -----	mil. dol.-----	695.3	322.9	173.7	405.8	597.0

See footnotes at end of table.

Table 3a. Summary Statistics for the Industry: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

item	Food products machinery (SIC 3551)	Textile machinery (SIC 3552)	Woodworking machinery (SIC 3553)	Paper industries machinery (SIC 3554)	Printing trades machinery (SIC 3555)	Special industry machinery, n.e.c. (SIC 3559)
Production workers:						
Average for year-----	1,000	20.6	12.8	5.9	10.0	15.5
March -----do-----	do	21.3	13.4	8.0	10.6	18.4
May -----do-----	do	21.0	13.1	5.9	10.4	15.9
August -----do-----	do	20.3	12.5	8.1	9.8	15.1
November -----do-----	do	19.8	12.3	5.7	9.3	14.8
Hours... millions	40.1	23.9	10.9	20.2	31.2	84.5
January to March -----do-----	do	10.3	8.2	2.8	5.4	8.4
April to June -----do-----	do	10.3	8.1	2.8	5.3	8.0
July to September -----do-----	do	9.7	5.7	2.7	4.8	7.5
October to December -----do-----	do	9.7	5.8	2.7	4.7	7.3
Wages... mil. dol...	390.3	184.5	91.3	201.5	283.9	794.7
Value added by manufacture ⁴ -----do-----	1 355.7	641.4	387.4	782.8	1 231.3	3 015.1
Cost of materials, etc. ⁵ -----do-----	957.2	424.1	332.2	822.5	974.1	2 263.2
Materials, parts, containers, etc., consumed -----do-----	848.0	365.5	298.4	479.2	786.8	1 919.3
Resales -----do-----	57.3	27.6	17.4	56.9	107.5	125.0
Fuels consumed ⁶ -----do-----	12.1	9.1	3.0	8.1	8.5	25.7
Purchased electric energy ⁷ -----do-----	16.4	11.8	8.1	11.4	19.8	56.1
Contract work -----do-----	23.4	10.1	7.2	66.9	51.8	137.1
Value of shipments, including resales -----do-----	2 320.8	1 059.0	730.7	1 387.4	2 256.9	5 351.1
Value of resales -----do-----	83.9	38.7	29.5	72.1	117.5	178.4
Manufacturers' inventories (see tables 3b and 3c)						
Capital expenditures for plant and equipment ⁸ -----do-----	87.5	82.8	22.4	31.2	79.2	196.8
New capital expenditures -----do-----	55.0	46.1	20.2	29.4	72.2	173.4
New buildings and other structures -----do-----	10.8	8.4	2.8	8.3	8.9	39.0
New machinery and equipment -----do-----	44.2	37.8	17.8	21.1	63.4	134.5
Used capital expenditures -----do-----	12.5	18.6	2.3	1.9	7.0	23.4
Primary product specialization ratio ⁹ -----percent-----	93	96	91	89	97	91
Coverage ratio ¹⁰ -----do-----	91	96	94	93	91	86

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during year.

³Data on supplemental labor costs are not included in annual payroll, but are shown in table 3d.

⁴Value added by manufacture is computed using inventory data reported on a cost or market basis prior to any adjustment to LIFO cost. See table 3b, footnote 1 for further explanation.

⁵Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3d.

⁶Data on purchased fuels by type were not collected for 1982. See MC82-S-4, Fuels and Electric Energy Consumed, for 1981 data on purchased fuels by type.

⁷Data on quantity of electric energy used for heat and power are included in table 3d.

⁸Data on capital expenditures for new machinery and equipment by type, depreciable assets, retirements, rental payments, and depreciation are included in table 3d.

⁹Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in industry.

¹⁰Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.

Table 3b. Value of Inventories for the Industry: End of 1981 and 1982

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Food products machinery (SIC 3551)		Textile machinery (SIC 3552)		Woodworking machinery (SIC 3553)		Paper industries machinery (SIC 3554)		Printing trades machinery (SIC 3555)		Special industry machinery, n.e.c. (SIC 3559)	
	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982
Total Inventories ¹ -----	715.9	700.8	298.5	298.6	169.9	148.7	388.4	380.3	812.9	567.8	1 524.0	1 424.4
Detail by method of valuation:												
Subject to LIFO costing ² -----	174.1	163.0	93.1	97.0	46.8	41.8	122.2	120.8	118.2	113.7	461.1	395.3
LIFO reserve -----	52.3	57.1	24.1	24.0	14.1	12.6	31.9	35.7	41.0	39.4	128.4	109.7
LIFO value -----	121.8	105.9	69.1	73.0	32.7	29.2	90.3	85.1	77.2	74.4	332.7	285.6
Not subject to LIFO costing -----	417.8	418.0	126.1	126.1	80.0	67.8	200.1	198.2	404.4	367.7	774.9	753.5
Valuation method not reported ³ -----	123.8	117.8	78.7	74.0	38.2	35.7	41.0	36.4	87.1	82.4	286.8	274.2
Amount subject to LIFO reported without associated reserve and value ⁴ -----	.4	4.0	.5	1.5	4.9	3.4	5.2	4.9	3.1	3.9	1.1	1.3
Detail by stage of fabrication:												
Finished goods -----	272.3	266.9	98.2	113.4	52.0	45.5	94.4	99.4	125.4	121.3	405.0	406.2
Work in process -----	238.8	236.3	93.8	85.2	58.1	53.6	177.8	170.3	272.9	225.6	655.4	561.4
Materials and supplies -----	205.0	197.4	106.5	99.9	59.7	49.6	96.4	90.6	214.5	220.9	463.5	436.7

¹Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (LIFO, FIFO, market, to name a few). In 1982, all respondents were requested to report inventories at cost or market. LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve. For further explanation, see Inventories in appendixes.

²Only includes data reported by respondents who (a) indicated amount of inventories subject to LIFO cost, and (b) provided sufficient information to determine associated LIFO reserve and value figures.

³Includes data estimated for nonresponse and nonmail administrative records and data reported by respondents who provided total inventory figures without other information.

⁴Includes data reported by respondents who indicated their inventories were subject to LIFO cost, but did not provide associated LIFO reserve and value figures.

Table 3c. Inventories by Specific Method of Valuation for the Industry: End of 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Food products machinery (SIC 3551)		Textile machinery (SIC 3552)		Woodworking machinery (SIC 3553)		Paper industries machinery (SIC 3554)		Printing trades machinery (SIC 3555)		Special industry machinery, n.e.c. (SIC 3559)	
	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)
Total Inventories	100.0	(X)	100.0	(X)	100.0	(X)	100.0	(X)	100.0	(X)	100.0	(X)
Last-In, First-Out (LIFO) methods	23.3	(X)	32.5	(X)	28.1	(X)	33.5	(X)	20.0	(X)	27.8	(X)
Non-LIFO methods	59.4	(X)	42.3	(X)	45.8	(X)	55.0	(X)	64.8	(X)	52.9	(X)
Cost basis:												
First-In, First-Out (FIFO)	21.8	2.4	21.8	2.8	28.4	5.4	37.3	2.3	28.9	2.0	14.0	1.8
Average cost	7.4	1.3	2.5	1.2	.8	.4	5.3	1.5	10.8	.8	11.2	1.8
Specific or actual cost	11.5	3.5	7.4	1.7	10.4	3.2	9.3	2.2	2.1	.4	7.8	1.2
Standard cost	17.4	1.7	5.8	1.2	3.7	1.1	.7	.2	20.9	2.8	18.8	2.1
Other	1.4	.1	4.8	1.1	2.0	1.4	1.4	.7	3.3	.8	3.2	1.4
Market basis:												
Market lower than cost	(Z)	(Z)	.2	(Z)	(Z)	(Z)	1.1	.1	.7	.8	.3	.1
Market always used	(Z)	(Z)	.3	.1	.6	.3	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)
Valuation method not reported	18.8	(X)	24.8	(X)	24.0	(X)	10.1	(X)	14.5	(X)	19.3	(X)
Amount subject to LIFO reported without associated reserve and value8	(X)	.5	(X)	2.3	(X)	1.4	(X)	.7	(X)	.1	(X)

Note: The percentages shown for the LIFO and non-LIFO totals and the categories "valuation method not reported" and "amount subject to LIFO reported..." are based on the census universe estimates included in table 3b. The percentages shown for the specific non-LIFO methods of valuation (e.g., FIFO, etc.) are based on a representative sample of establishments included in the annual survey of manufactures (ASM) panel for 1982 (see appendixes for description of ASM). The absolute standard error of each of the ASM estimates is shown above.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Food products machinery (SIC 3551)		Textile machinery (SIC 3552)		Woodworking machinery (SIC 3553)		Paper industries machinery (SIC 3554)		Printing trades machinery (SIC 3555)		Special industry machinery, n.e.c. (SIC 3559)	
	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)
Supplemental labor costs:												
Total	145.2	2	65.5	3	33.9	5	88.4	4	126.7	2	342.9	2
Legal costs	60.9	2	29.4	4	16.1	7	38.0	2	52.5	3	135.2	2
Voluntary costs	84.3	4	38.1	3	17.7	5	52.4	8	74.1	4	207.7	3
Purchased services:												
Cost of purchased services for the repair of—												
Buildings and other structures	2.8	9	1.8	10	.8	14	1.5	15	3.1	17	13.1	38
Response coverage ratio (percent) ²	79.8	(X)	87.0	(X)	87.9	(X)	59.8	(X)	89.0	(X)	78.1	(X)
Machinery	4.0	9	2.4	13	1.5	17	3.6	7	9.3	13	14.7	7
Response coverage ratio (percent) ²	78.7	(X)	68.8	(X)	74.9	(X)	56.2	(X)	74.8	(X)	78.2	(X)
Cost of purchased communication services	8.3	11	4.8	10	3.8	27	4.1	8	14.8	7	26.5	10
Response coverage ratio (percent) ²	78.2	(X)	81.2	(X)	71.5	(X)	51.5	(X)	78.5	(X)	77.0	(X)
Electric energy used for heat and power:												
Purchased:												
Quantity (million kWh)	279.5	2	241.2	2	130.2	3	177.7	5	373.2	1	870.4	8
Cost	18.4	(X)	11.8	(X)	8.1	(X)	11.4	(X)	19.8	(X)	56.1	(X)
Generated less sold (million kWh)	(S)	(NA)	-	-	-	-	-	-	(S)	(NA)	-	-
Gross book value of depreciable assets:												
Total:												
Beginning of year	814.4	5	435.9	5	195.3	8	463.5	7	698.0	4	1 506.4	4
New capital expenditures	35.1	10	41.9	10	17.7	16	33.4	31	65.3	8	138.7	8
Used capital expenditures	17.7	29	18.8	4	.6	45	2.3	51	5.0	5	11.9	5
Retirements	22.9	11	27.7	27	10.7	20	11.9	13	29.0	21	56.8	15
End of year	644.3	5	466.7	5	202.9	8	487.3	8	739.3	3	1 600.8	4
Buildings and other structures:												
Beginning of year	196.5	6	122.1	8	53.3	9	187.2	13	187.2	5	497.0	5
New capital expenditures	7.7	20	7.2	11	2.0	19	8.5	8	8.4	15	34.1	18
Used capital expenditures	3.4	48	7.5	4	—	1	.2	21	1.0	1	5.4	3
Retirements	7.4	4	10.0	52	2.9	31	2.8	19	.8	15	11.8	35
End of year	200.2	6	128.8	6	52.4	10	171.2	12	195.9	5	525.0	5
Machinery and equipment:												
Beginning of year	417.9	5	313.8	6	142.0	9	296.3	5	510.8	3	1 009.4	4
New capital expenditures	27.3	11	34.7	10	15.7	16	28.9	38	56.9	9	104.8	5
Automobiles, trucks, etc., for highway use	1.7	17	1.3	34	.3	20	.8	25	.8	29	5.7	25
Computers and peripheral data processing equipment	1.9	34	1.6	38	.4	38	1.0	14	5.8	3	9.5	10
All other	20.0	14	16.3	12	14.0	18	13.3	9	37.8	7	71.3	8
New machinery and equipment, n.s.k. ³	3.8	(S)	15.5	(S)	1.0	(S)	11.8	(S)	12.5	(S)	18.2	(S)
Used capital expenditures	14.3	25	9.2	6	.8	45	2.0	58	3.9	7	8.5	8
Retirements	15.5	15	17.7	23	7.8	17	9.1	12	28.2	21	45.0	12
End of year	444.1	5	340.0	8	150.5	8	316.1	7	543.4	3	1 075.8	4
Rental payments:												
Total	17.4	12	8.7	8	8.1	12	5.5	11	21.0	8	54.4	10
Buildings and other structures	10.2	21	5.6	13	4.1	15	1.5	28	10.5	12	26.8	18
Machinery and equipment	7.2	11	3.1	9	4.0	11	4.0	10	10.5	11	27.7	7
Depreciation charges during 1982:												
Total	51.9	5	38.1	7	18.3	4	30.2	7	60.5	4	125.3	9
Buildings and other structures	9.0	9	5.6	7	2.2	8	7.3	11	9.0	8	25.9	9
Machinery and equipment	42.9	6	30.5	8	14.2	4	22.8	7	51.5	4	99.3	9

See footnotes at end of table.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982—Con.

Note: Data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used expenditures are also shown in table 3a. Data in table 3a are census universe totals and may differ from annual survey of manufactures (ASM) sample estimates shown in this table. Data in this table represent best estimates of year-to-year change as measured by the continuing ASM sample. However, they are subject to sampling error and, hence, as estimates of level, are not as reliable as universe figures shown in table 3a.

¹For description of relative standard error of estimate, see Qualifications of the Data in appendixes.

²Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to weighted total employment for all sample establishments classified in industry. (See appendixes for explanation of sample weight.)

³Represents total machinery and equipment expenditures for establishments that did not break down their expenditures by specific type.

Table 4. Industry Statistics by Employment Size of Establishment: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E ¹	All establish- ments (no.)	All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expendi- tures (million dollars)	End-of- year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3551, FOOD PRODUCTS MACHINERY												
Total	-	748	32.7	695.3	20.6	40.1	390.3	1 355.7	957.2	2 320.8	55.0	700.6
Establishments with an average of—												
1 to 4 employees	E9	150	.3	5.7	.2	.4	3.6	13.1	10.2	23.5	.9	6.8
5 to 9 employees	E7	145	1.0	17.2	.6	1.2	10.0	34.1	24.3	59.4	2.1	16.1
10 to 19 employees	E3	138	1.9	35.4	1.3	2.5	20.7	65.5	50.3	115.6	3.3	23.8
20 to 49 employees	E1	150	4.6	93.1	3.1	5.9	52.0	172.2	129.4	306.6	8.1	74.2
50 to 99 employees	-	74	5.2	103.5	3.5	6.6	59.9	208.0	196.8	404.5	11.2	104.0
100 to 249 employees	-	68	9.6	215.9	5.8	11.6	115.9	446.1	275.4	727.3	17.7	217.3
250 to 499 employees	-	17	5.9	119.7	3.5	7.1	68.2	268.4	165.5	424.3	7.3	142.7
500 to 999 employees	-	6	4.2	104.7	2.6	4.7	60.1	148.2	105.5	259.7	4.4	115.9
Covered by administrative records ²	E9	241	1.2	18.1	.8	1.6	10.6	37.3	27.8	66.4	2.8	18.6
INDUSTRY 3552, TEXTILE MACHINERY												
Total	E2	551	19.4	322.9	12.8	23.9	184.5	641.4	424.1	1 059.0	46.1	298.6
Establishments with an average of—												
1 to 4 employees	E9	151	.3	4.6	.2	.4	3.1	11.0	7.3	18.5	.9	5.4
5 to 9 employees	E7	95	.7	9.5	.5	.9	5.6	18.2	14.2	32.5	1.5	7.8
10 to 19 employees	E4	108	1.5	23.4	1.1	2.0	14.6	43.0	34.6	77.6	2.7	13.3
20 to 49 employees	E3	108	3.3	53.8	2.5	4.9	34.4	97.2	70.2	168.7	6.6	34.2
50 to 99 employees	E2	48	3.3	56.2	2.1	4.1	31.8	107.3	79.2	183.4	5.1	48.9
100 to 249 employees	E2	29	4.3	69.9	2.7	4.8	37.2	165.9	110.2	269.0	13.1	73.0
250 to 499 employees	-	8	2.7	47.3	1.6	3.1	25.5	97.7	51.5	147.8	2.6	58.8
500 to 999 employees	-	3	3.4	58.2	2.1	3.7	32.3	101.1	56.9	161.5	13.6	57.2
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	180	.7	8.7	.5	1.0	5.3	19.4	12.1	32.0	1.7	9.4
INDUSTRY 3553, WOODWORKING MACHINERY												
Total	E1	279	9.7	173.7	5.9	10.9	91.3	387.4	332.2	730.7	20.2	148.7
Establishments with an average of—												
1 to 4 employees	E8	85	.2	2.5	.1	.2	1.5	5.5	4.7	10.4	.2	2.7
5 to 9 employees	E5	48	.3	4.5	.2	.4	2.6	9.6	8.0	17.6	1.0	4.2
10 to 19 employees	E2	51	.7	10.7	.5	.9	6.6	19.8	17.1	37.9	.4	6.2
20 to 49 employees	E2	49	1.6	27.4	.9	1.7	14.5	49.6	42.8	91.2	1.5	23.9
50 to 99 employees	E1	20	1.4	28.6	.9	1.7	14.8	49.2	40.6	90.2	1.9	21.9
100 to 249 employees	-	21	3.3	63.5	1.9	3.7	32.5	139.0	122.7	266.2	6.3	58.0
250 to 499 employees	-	3	2.2	36.4	1.4	2.2	18.7	114.8	96.5	217.2	8.9	31.8
500 to 999 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	84	.3	3.3	.2	.4	1.9	7.6	6.7	14.5	.2	3.0
INDUSTRY 3554, PAPER INDUSTRIES MACHINERY												
Total	-	253	17.8	405.8	10.0	20.2	201.5	762.6	622.5	1 387.4	29.4	360.3
Establishments with an average of—												
1 to 4 employees	E9	40	.1	1.0	(Z)	.1	.6	1.6	1.5	3.2	.1	.8
5 to 9 employees	E6	37	.3	4.5	.2	.3	2.4	9.9	8.7	18.7	.8	4.1
10 to 19 employees	E3	50	.7	12.1	.4	.8	6.6	24.6	19.6	44.6	.9	8.4
20 to 49 employees	E1	52	1.7	34.8	1.1	2.2	19.9	64.9	57.2	125.6	2.0	30.8
50 to 99 employees	-	31	2.2	50.8	1.3	2.7	26.0	113.4	51.6	165.1	3.5	30.1
100 to 249 employees	-	28	4.3	94.0	2.5	5.6	48.3	165.9	121.1	291.3	8.6	80.9
250 to 499 employees	-	9	3.1	70.1	1.7	3.4	37.8	127.7	87.8	218.3	3.6	54.6
500 to 999 employees	-	4	5.6	138.5	2.7	5.1	59.8	254.5	275.1	520.6	9.9	150.6
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	78	.5	7.9	.3	.6	4.1	13.2	13.0	26.6	.9	6.8
INDUSTRY 3555, PRINTING TRADES MACHINERY												
Total	-	570	28.2	597.0	15.5	31.2	293.9	1 231.3	974.1	2 256.9	72.2	567.8
Establishments with an average of—												
1 to 4 employees	E8	132	.3	5.0	.2	.3	3.2	11.0	9.3	20.6	.8	4.8
5 to 9 employees	E6	107	.7	12.8	.5	.9	7.4	25.0	19.6	45.1	2.0	8.9
10 to 19 employees	E3	116	1.6	29.1	1.0	1.9	15.5	60.5	49.8	110.8	3.1	19.5
20 to 49 employees	E1	119	3.7	76.4	2.3	4.7	40.9	151.4	117.6	270.4	7.0	44.2
50 to 99 employees	-	43	3.0	59.5	1.7	3.5	29.2	127.9	104.9	232.3	5.4	55.6
100 to 249 employees	-	30	5.0	106.7	2.8	5.4	52.1	194.1	174.1	373.8	11.5	109.5
250 to 499 employees	-	13	4.2	97.3	2.1	4.4	44.5	196.3	161.0	366.8	10.8	119.5
500 to 999 employees	-	7	4.5	103.3	2.6	5.0	54.9	323.2	159.4	503.7	9.3	100.5
1,000 to 2,499 employees	-	2	5.2	106.9	2.4	5.0	46.2	141.8	178.3	333.3	22.3	105.3
2,500 employees or more	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	182	.8	11.6	.5	.9	6.2	23.9	20.1	44.6	2.0	11.4

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry and employment size class	E1	All establish- ments (no.)	All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.												
Total	E1	1 826	74.9	1 557.6	43.7	84.5	794.7	3 015.1	2 283.2	5 351.1	173.4	1 424.4
Establishments with an average of—												
1 to 4 employees	E9	443	.9	13.9	.5	1.1	8.2	33.2	28.0	82.1	1.8	15.7
5 to 9 employees	E7	314	2.2	36.0	1.3	2.8	19.7	73.3	59.4	133.3	4.3	33.1
10 to 19 employees	E3	376	5.2	91.8	3.4	8.4	51.2	177.2	153.1	330.4	9.8	65.0
20 to 49 employees	E2	387	11.4	232.6	7.4	14.5	127.7	425.3	351.9	783.5	20.4	171.7
50 to 99 employees	E1	187	11.8	235.4	8.8	13.1	121.5	423.1	374.5	817.2	22.8	213.4
100 to 249 employees	-	106	18.6	357.5	9.8	19.0	177.6	713.9	503.9	1 222.3	37.8	319.1
250 to 499 employees	-	35	12.4	271.1	8.9	15.0	138.9	475.1	395.8	886.7	33.0	312.6
500 to 999 employees	-	13	8.5	175.5	4.1	7.3	78.3	355.3	256.4	625.1	18.0	170.1
1,000 to 2,499 employees	-	5	8.1	143.8	3.5	5.5	71.5	338.8	140.2	480.6	26.0	123.7
Covered by administrative records ²	E9	570	2.5	34.4	1.5	2.9	18.3	70.5	58.3	131.0	4.0	34.0

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

¹Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

²Report forms were not mailed to small single-unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1982 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective size classes shown.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) Industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing operations of individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establish- ments (number)	All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3551	Food products machinery: Entire industry	748	32.7	695.3	20.6	40.1	390.3	1 355.7	957.2	2 320.8	55.0
	Establishments with 75 percent specialization or more	701	28.6	605.2	17.9	34.9	338.6	1 181.6	830.9	2 018.1	46.8
35511	Dairy and milk products plant machinery: Establishments with this product class primary	26	2.5	54.1	1.7	3.4	35.8	109.5	111.5	222.3	5.1
	Establishments with 75 percent specialization or more in class	14	.9	19.2	.6	1.2	12.2	43.4	37.1	79.7	1.0
35512	Commercial food products machinery: Establishments with this product class primary	110	7.5	164.3	4.9	9.6	92.9	272.2	241.0	506.2	13.0
	Establishments with 75 percent specialization or more in class	97	5.6	121.4	3.8	7.4	89.1	195.0	193.1	383.3	9.7
35513	Industrial food products machinery: Establishments with this product class primary	128	9.2	195.3	5.6	10.8	102.8	373.6	255.0	635.7	11.2
	Establishments with 75 percent specialization or more in class	100	7.1	151.2	4.3	8.1	79.4	296.8	209.6	512.4	9.0
35514	Packing, packaging, and bottling machinery: Establishments with this product class primary	127	10.5	232.1	8.4	12.8	129.2	507.8	282.0	793.4	19.6
	Establishments with 75 percent specialization or more in class	107	8.0	180.3	4.9	9.7	99.5	380.4	217.0	595.8	16.1
3552	Textile machinery: Entire industry	551	19.4	322.9	12.8	23.9	184.5	641.4	424.1	1 059.0	46.1
	Establishments with 75 percent specialization or more	522	17.8	293.3	11.7	21.8	168.0	590.4	386.8	970.8	44.2
35521	Textile machinery: Establishments with this product class primary	137	9.3	161.9	5.8	11.1	89.5	321.7	248.7	578.6	24.4
	Establishments with 75 percent specialization or more in class	89	4.5	80.4	2.8	5.8	43.8	164.4	141.6	305.2	10.9
35522	Parts and attachments for textile machinery: Establishments with this product class primary	125	7.6	124.4	5.2	9.3	71.8	249.2	131.0	382.3	16.3
	Establishments with 75 percent specialization or more in class	100	8.0	96.6	4.0	7.3	54.3	194.3	105.6	286.1	13.8
3553	Woodworking machinery: Entire industry	279	9.7	173.7	5.9	10.9	91.3	387.4	332.2	730.7	20.2
	Establishments with 75 percent specialization or more	253	8.2	143.4	5.0	9.4	75.6	332.5	284.3	622.3	18.3
35531	Woodworking machinery, except for home workshop: Establishments with this product class primary	117	5.6	110.9	3.2	8.1	58.5	204.5	166.5	372.9	6.3
	Establishments with 75 percent specialization or more in class	97	4.3	84.2	2.5	4.8	42.0	152.7	125.5	279.3	4.9
35532	Woodworking machinery for home workshop: Establishments with this product class primary	13	2.9	45.8	1.8	3.2	24.8	148.3	134.9	291.5	12.0
	Establishments with 75 percent specialization or more in class	11	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing operations of individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3554	Paper Industries machinery: Entire industry ----- Establishments with 75 percent specialization or more -----	253 219	17.8 13.8	405.8 321.1	10.0 7.6	20.2 15.6	201.5 155.9	762.6 607.5	622.5 504.9	1 387.4 1 113.8	29.4 22.8
35541	Paper industries machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	92 52	12.9 6.0	303.7 144.8	7.2 3.4	14.8 7.3	149.2 67.5	569.1 282.0	497.0 275.3	1 064.8 559.6	22.8 6.5
35542	Parts for paper industries machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	49 29	3.7 1.0	81.0 23.5	2.1 .6	4.0 1.2	40.9 12.1	158.5 47.8	93.7 27.0	254.7 75.1	5.0 2.9
3555	Printing trades machinery: Entire industry ----- Establishments with 75 percent specialization or more -----	570 538	28.2 26.4	597.0 559.0	15.5 14.5	31.2 29.3	293.9 276.9	1 231.3 1 163.5	974.1 930.8	2 256.9 2 145.7	72.2 68.8
35551	Printing presses, lithographic: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	34 23	8.1 5.3	189.9 129.1	4.7 3.1	9.5 6.6	101.6 69.2	507.3 383.1	340.9 270.5	870.7 667.6	21.4 16.2
35552	Printing presses, other than lithographic: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	32 25	1.8 1.1	38.7 23.4	1.1 .7	2.3 1.5	19.4 11.1	64.7 44.6	63.4 45.9	127.6 91.2	3.0 2.5
35553	Typesetting machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	14 13	6.1 (D)	123.0 (D)	2.3 (D)	4.7 (D)	41.2 (D)	142.1 (D)	190.6 (D)	352.5 (D)	24.2 (D)
35556	Binding machinery and equipment: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	23 18	1.6 1.4	34.3 29.2	1.0 .9	1.8 1.6	18.7 16.3	83.1 71.5	66.5 57.4	152.5 131.9	2.8 2.5
35557	Printing trades machinery, n.e.c.: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	182 149	8.6 6.3	175.3 125.9	5.2 3.8	10.3 7.7	93.8 68.1	367.8 279.9	261.5 190.8	634.7 466.7	15.8 11.0
3559	Special Industry machinery, n.e.c.: Entire industry ----- Establishments with 75 percent specialization or more -----	1 826 1 654	74.9 62.3	1 557.6 1 283.2	43.7 36.7	84.5 71.0	794.7 656.4	3 015.1 2 549.2	2 263.2 1 896.2	5 351.1 4 495.4	173.4 152.6
35591	Chemical manufacturing machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	79 68	7.9 5.7	183.1 134.8	4.9 3.7	9.7 7.3	104.1 80.7	416.1 311.5	212.0 170.0	622.3 476.4	17.8 15.1
35592	Foundry machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	57 49	4.1 3.7	90.4 79.7	2.1 1.9	4.4 3.9	42.6 37.0	161.5 141.9	119.5 107.8	287.5 256.5	6.6 5.9
35593	Plastics-working machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	138 104	12.0 8.1	251.9 164.2	6.5 4.6	12.0 8.4	119.6 79.5	455.3 302.9	407.0 281.7	888.5 601.0	29.6 23.1
35594	Rubber-working machinery: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	41 26	2.9 1.7	60.0 35.0	1.8 1.1	3.5 2.2	33.1 20.1	109.4 70.9	94.9 54.6	212.1 125.0	4.0 2.7
35595	Special industry machinery, n.e.c.: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	542 452	38.4 31.7	814.6 671.7	22.5 18.6	43.4 35.9	409.5 335.4	1 567.7 1 327.7	1 181.4 990.6	2 778.9 2 341.6	96.7 85.8

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments				
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio Col. B ÷ Col. B+C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio Col. B ÷ Col. F (percent)	
		A	B	C	D	E	F	G	H	I	
3551	Food products machinery	1982--	2 320.8	1 969.5	158.5	192.8	93	2 159.8	1 969.5	190.4	91
		1977--	1 786.8	1 447.4	155.4	184.0	90	1 576.2	1 447.4	128.8	92
		1972--	1 000.1	772.2	88.6	139.3	90	867.2	772.2	95.0	89
3552	Textile machinery	1982--	1 059.0	922.6	42.0	94.4	96	965.5	922.6	43.0	96
		1977--	950.0	809.0	61.2	79.8	93	857.1	809.0	48.1	94
		1972--	823.7	709.1	42.6	72.0	94	738.1	709.1	29.0	96
3553	Woodworking machinery	1982--	730.7	615.5	61.9	53.3	91	656.7	615.5	41.2	94
		1977--	585.6	517.7	32.8	35.1	94	547.3	517.7	29.6	95
		1972--	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
3554	Paper industries machinery	1982--	1 387.4	1 112.6	138.3	136.5	89	1 199.0	1 112.6	86.4	93
		1977--	826.9	625.1	119.2	82.6	84	698.3	625.1	73.2	90
		1972--	447.8	329.7	60.0	58.1	85	381.4	329.7	51.7	86
3555	Printing trades machinery	1982--	2 256.9	1 993.9	52.4	210.7	97	2 188.2	1 993.9	194.3	91
		1977--	1 350.9	1 182.2	37.9	130.8	97	1 287.3	1 182.2	105.1	92
		1972--	823.5	670.4	18.9	134.2	97	736.6	670.4	66.2	91
3559	Special industry machinery, n.e.c.	1982--	5 351.1	4 583.4	450.3	317.4	91	5 353.7	4 583.4	770.4	86
		1977--	3 622.0	2 950.2	385.3	286.5	88	3 465.2	2 950.2	515.0	85
		1972--	2 616.9	1 923.6	421.4	271.9	82	2 295.9	1 852.4	443.5	81

¹Data prior to 1977 are not comparable. See description of industries in text.

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least \$2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Food products machinery (SIC 3551)	Textile machinery (SIC 3552)	Woodworking machinery (SIC 3553)	Paper industries machinery (SIC 3554)	Printing trades machinery (SIC 3555)	Special industry machinery, n.e.c. (SIC 3559)	Other industries
	Total	(X)	2 320.8	1 059.0	730.7	1 387.4	2 257.0	5 351.1	(X)
	Primary products	(X)	1 969.5	922.8	615.5	1 112.6	1 993.9	4 583.4	(X)
	Secondary products	(X)	158.5	42.0	61.9	138.3	52.4	450.3	(X)
	Miscellaneous receipts	(X)	192.8	94.4	53.3	136.5	210.7	317.4	(X)
3551-	Food products machinery	2 159.8	1 969.5	(D)	-	(D)	(D)	43.2	(D)
35511	Dairy and milk products plant machinery	176.4	159.2	-	-	-	-	(D)	(D)
35512	Commercial food products machinery	479.7	427.8	-	-	(D)	-	7.9	(D)
35513	Industrial food products machinery	620.1	571.1	(D)	-	-	(D)	27.4	(D)
35514	Packing, packaging, and bottling machinery	725.2	657.9	-	-	(D)	(D)	(D)	40.4
35510	Food products machinery, n.s.k.	158.5	153.5	-	-	-	-	(D)	(D)
3552-	Textile machinery	965.5	(D)	922.6	-	(D)	(D)	3.1	31.1
35521	Textile machinery	454.3	(D)	433.6	-	(D)	(D)	1.2	11.8
35522	Parts and attachments for textile machinery	390.0	(D)	374.5	-	(D)	-	.9	(D)
35520	Textile machinery, n.s.k.	121.3	-	114.5	-	(D)	-	1.0	(D)
3553-	Woodworking machinery	856.7	(D)	-	615.5	2.8	-	.9	(D)
35531	Woodworking machinery, except for home workshop	327.6	-	-	308.7	(D)	-	.9	(D)
35532	Woodworking machinery for home workshop	262.6	(D)	-	243.8	-	-	-	(D)
35530	Woodworking machinery, n.s.k.	66.5	-	-	63.1	(D)	-	-	(D)
3554-	Paper industries machinery	1 199.0	-	(D)	(D)	1 112.6	(D)	25.4	48.7
35541	Paper industries machinery	853.5	-	(D)	-	782.8	(D)	24.4	(D)
35542	Parts for paper industries machinery	276.1	-	(D)	-	266.1	-	(D)	(D)
35540	Paper industries machinery, n.s.k.	69.4	-	(D)	-	63.7	(D)	(D)	4.4
3555-	Printing trades machinery	2 188.2	(D)	(D)	-	18.4	1 993.9	5.6	(D)
35551	Printing presses, lithographic	665.0	-	-	-	(D)	656.9	(D)	(D)
35552	Printing presses, other than lithographic	148.9	-	-	-	9.4	133.9	(D)	(D)
35553	Typesetting machinery	303.4	-	-	-	-	(D)	-	(D)
35556	Binding machinery and equipment	171.6	-	-	-	-	(D)	-	(D)
35557	Printing trades machinery, n.e.c.	783.4	(D)	2.3	-	(D)	665.7	(D)	110.3
35550	Printing trades machinery, n.s.k.	116.0	-	(D)	-	-	113.0	(D)	2.5
3559-	Special industry machinery, n.e.c.	5 353.7	(D)	(D)	(D)	24.8	5.5	4 583.4	694.1
35591	Chemical manufacturing machinery	641.3	(D)	(D)	(D)	(D)	-	535.0	66.2
35592	Foundry machinery	260.0	-	-	-	-	-	243.7	16.4
35593	Plastics-working machinery	785.7	(D)	-	-	(D)	(D)	709.4	61.1
35594	Rubber-working machinery	187.0	(D)	-	-	(D)	-	173.9	12.2
35595	Special industry machinery, n.e.c.	2 933.5	(D)	(D)	(D)	3.9	(D)	2 387.7	526.5
35590	Special industry machinery, n.e.c., n.s.k.	546.2	(D)	-	(D)	-	(D)	533.6	11.8

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least \$2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Food products machinery (SIC 3551)	Textile machinery (SIC 3552)	Woodworking machinery (SIC 3553)	Paper industries machinery (SIC 3554)	Printing trades machinery (SIC 3555)	Special industry machinery, n.e.c. (SIC 3559)	Other industries
OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP									
2514-	Metal household furniture	(X)	-	-	-	-	-	(D)	(X)
3069-	Fabricated rubber products, n.e.c.	(X)	-	-	-	-	2.7	(D)	(X)
3079-	Miscellaneous plastics products	(X)	(D)	(D)	-	-	(D)	1.2	(X)
3321-	Gray iron castings	(X)	-	4.6	-	(D)	-	(D)	(X)
3341-	Secondary nonferrous metals	(X)	-	-	-	-	(D)	-	(X)
3425-	Hand saws and saw blades	(X)	-	-	4.3	(D)	-	(D)	(X)
3433-	Heating equipment, except electric	(X)	(D)	-	-	-	-	1.2	(X)
3443-	Fabricated plate work (boiler shops)	(X)	(D)	(D)	(D)	(D)	-	8.3	(X)
3449-	Miscellaneous metal work	(X)	(D)	-	-	-	-	(D)	(X)
3469-	Metal stampings, n.e.c.	(X)	(D)	(D)	-	-	-	3.5	(X)
3479-	Metal coating and allied services	(X)	-	-	-	-	(D)	5.8	(X)
3494-	Valves and pipe fittings	(X)	(D)	-	-	(D)	-	(D)	(X)
3499-	Fabricated metal products, n.e.c.	(X)	(D)	-	-	(D)	(D)	2.0	(X)
3511-	Turbines and turbine generator sets	(X)	-	-	-	(D)	-	(D)	(X)
3523-	Farm machinery and equipment	(X)	41.7	-	(D)	(D)	(D)	1.3	(X)
3524-	Lawn and garden equipment	(X)	-	-	(D)	-	(D)	-	(X)
3531-	Construction machinery	(X)	-	(D)	(D)	2.7	-	(D)	(X)
3532-	Mining machinery	(X)	(D)	(D)	-	(D)	-	5.8	(X)
3533-	Oil field machinery	(X)	-	-	-	(D)	-	.4	(X)
3535-	Conveyors and conveying equipment	(X)	6.2	-	-	(D)	(D)	13.3	(X)
3537-	Industrial trucks and tractors	(X)	(D)	-	(D)	(D)	-	(D)	(X)
3541-	Machine tools, metal cutting types	(X)	(D)	-	28.5	(D)	(D)	13.2	(X)
3542-	Machine tools, metal forming types	(X)	(D)	-	(D)	-	(D)	6.1	(X)
3544-	Special dies, tools, jigs, and fixtures	(X)	(D)	.4	-	(D)	(D)	29.2	(X)
3545-	Machine tool accessories	(X)	(D)	-	(D)	(D)	(D)	4.2	(X)
3546-	Power driven hand tools	(X)	-	(D)	3.9	-	-	(D)	(X)
3549-	Metalworking machinery, n.e.c.	(X)	(D)	-	-	(D)	(D)	8.8	(X)
3561-	Pumps and pumping equipment	(X)	(D)	-	-	(D)	(D)	13.5	(X)
3563-	Air and gas compressors	(X)	-	-	-	-	-	2.5	(X)
3564-	Blowers and fans	(X)	2.1	-	-	(D)	(D)	17.7	(X)
3566-	Speed changers, drives, and gears	(X)	-	-	(D)	-	-	(D)	(X)
3567-	Industrial furnaces and ovens	(X)	(D)	(D)	(D)	-	-	3.0	(X)
3569-	General industrial machinery, n.e.c.	(X)	7.7	(D)	(D)	6.4	(D)	53.6	(X)
3573-	Electronic computing equipment	(X)	-	-	-	-	-	(D)	(X)
3574-	Calculating and accounting machines	(X)	-	-	-	-	(D)	-	(X)
3582-	Commercial laundry equipment	(X)	-	-	-	-	-	(D)	(X)
3585-	Refrigeration and heating equipment	(X)	4.4	(D)	-	(D)	-	(D)	(X)
3586-	Measuring and dispensing pumps	(X)	-	-	-	-	-	(D)	(X)
3589-	Service industry machinery, n.e.c.	(X)	3.3	-	-	-	-	5.4	(X)
3599-	Machinery, except electrical, n.e.c.	(X)	5.9	1.8	(D)	2.2	2.0	23.9	(X)
3622-	Industrial controls	(X)	-	-	-	-	(D)	(D)	(X)
3623-	Welding apparatus, electric	(X)	-	-	(D)	-	-	5.6	(X)
3679-	Electronic components, n.e.c.	(X)	-	(D)	-	-	-	11.8	(X)
3728-	Aircraft equipment, n.e.c.	(X)	-	-	-	-	-	(D)	(X)
3823-	Process control instruments	(X)	-	(D)	-	-	(D)	(D)	(X)
3825-	Instruments to measure electricity	(X)	-	-	-	-	-	(D)	(X)
3842-	Surgical appliances and supplies	(X)	(D)	(D)	-	-	-	(D)	(X)
3861-	Photographic equipment and supplies	(X)	-	-	-	(D)	1.5	(D)	(X)
MISCELLANEOUS RECEIPTS									
93000 00	Receipts for work done for others on their materials	(X)	40.3	29.9	10.5	22.1	7.6	50.6	(X)
99980 13	Sales of scrap and refuse	(X)	2.5	-	(D)	(X)	-	1.0	(X)
99980 31	Receipts for installation or construction of products of the establishment	(X)	11.1	6.4	(D)	(X)	20.3	14.1	(X)
99980 41	Receipts for research and development work	(X)	(X)	(X)	(X)	(X)	(X)	3.4	(X)
99980 61	Receipts for repair work	(X)	27.0	8.1	(D)	21.1	48.7	35.7	(X)
99980 98	Other miscellaneous receipts, including receipts for repair work, etc.	(X)	25.3	11.3	4.4	16.7	11.3	30.4	(X)
99980 00	Miscellaneous receipts, n.s.k.	(X)	2.7	(X)	.5	4.5	5.3	3.8	(X)
99989 00	Sales of products bought and resold without further manufacture, processing, or assembly at establishment	(X)	83.9	38.7	29.5	72.1	117.5	178.4	(X)

Table 5c-2. Industry-Product Analysis—Other Industries With Shipments of Primary Products: 1982

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Other industries	Value	1982 product code	Other industries	Value
3551-	FOOD PRODUCTS MACHINERY		3559-	SPECIAL INDUSTRY MACHINERY, N.E.C.	
	3466 Crowns and closures	(D)	3079 Miscellaneous plastics products		5.8
	3535 Conveyors and conveying equipment	(D)	3291 Abrasive products		(D)
	3561 Pumps and pumping equipment	7.8	3433 Heating equipment, except electric		(D)
	3569 General industrial machinery, n.e.c.	7.9	3443 Fabricated plate work (boiler shops)		(D)
	3585 Refrigeration and heating equipment	(D)	3483 Ammunition, except for small arms, n.e.c.		(D)
	3634 Electric housewares and fans	(D)	3531 Construction machinery		5.9
	3636 Sewing machines	(D)	3533 Oil field machinery		15.1
	3728 Aircraft equipment, n.e.c.	(D)	3535 Conveyors and conveying equipment		20.8
3553-	WOODWORKING MACHINERY		3536 Hoists, cranes, and monorails		(D)
	3546 Power driven hand tools	7.1	3541 Machine tools, metal cutting types		21.2
	3636 Sewing machines	(D)	3544 Special dies, tools, jigs, and fixtures		26.7
3554-	PAPER INDUSTRIES MACHINERY		3545 Machine tool accessories		6.0
	3443 Fabricated plate work (boiler shops)	(D)	3547 Rolling mill machinery		(D)
	3569 General industrial machinery, n.e.c.	17.2	3549 Metalworking machinery, n.e.c.		12.8
	3579 Office machines, n.e.c., and typewriters	(D)	3561 Pumps and pumping equipment		(D)
3555-	PRINTING TRADES MACHINERY		3563 Air and gas compressors		(D)
	2795 Lithographic platemaking services	(D)	3569 General industrial machinery, n.e.c.		102.8
	3041 Rubber and plastics hose and belting	(D)	3585 Refrigeration and heating equipment		(D)
	3069 Fabricated rubber products, n.e.c.	38.1	3589 Service industry machinery, n.e.c.		10.4
	3079 Miscellaneous plastics products	12.2	3599 Machinery, except electrical, n.e.c.		30.6
	3569 General industrial machinery, n.e.c.	(D)	3661 Telephone and telegraph apparatus		(D)
	3579 Office machines, n.e.c., and typewriters	(D)	3671 Electron tubes, all types		(D)
	3622 Industrial controls	(D)	3674 Semiconductors and related devices		(D)
	3861 Photographic equipment and supplies	(D)	3679 Electronic components, n.e.c.		(D)
			3724 Aircraft engines and engine parts		(D)
			3728 Aircraft equipment, n.e.c.		11.5
			3731 Ship building and repairing		(D)
			3861 Photographic equipment and supplies		(D)

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3551--	FOOD PRODUCTS MACHINERY						
35511 —	Total	(NA)	(X)	2 159.8	(NA)	(X)	1 576.2
35511 41	Dairy and milk products plant machinery and equipment, except bottling and packaging machinery	(NA)	(X)	176.4	(NA)	(X)	128.5
35511 73	Pasteurizers and homogenizers	8	**27 122	96.1	5	(S)	8.9
35511 83	Ice cream freezers	8			8	*20 088	62.4
35511 91	Butter and cheese processing plant machinery and equipment	10	(S)	16.8	6	499	8.6
35511 99	Dry milk processing plant machinery and equipment	4	395	10.4	5	(S)	7.6
35511 00	Other dairy and milk products processing plant machinery and equipment, including cream separators (capacity more than 1500 lb per hour) and washing and sterilizing equipment	19	(S)	53.1	'25	(S)	'36.8
	Food products machinery, n.s.k.	(NA)	(X)	-	(NA)	(X)	4.2
35512 —	Commercial food products machinery, except packaging machinery	(NA)	(X)	479.7	(NA)	(X)	357.2
35512 11	Commercial food products machinery, except bakery equipment:						
35512 21	Slicers	21	4.6	58.2	19	*45.2	36.3
35512 31	Choppers, grinders, cutters, dicers, and similar machines	27	*84.3	109.3	20	*44.1	44.8
35512 41	Mixers and whippers, except drink mixers	12	(S)	37.1	13	17.1	45.5
35512 61	Other commercial food preparation machines, including tenderizers (power driven)	33	(X)	68.4	36	(X)	62.1
35512 71	Bakery machinery and equipment:						
35512 75	Dough mixers	8	*1 374	12.4	10	*787	7.8
35512 87	Bake ovens:						
35512 92	Traveling tray	6	1 076	11.3	5	*31	5.5
35512 51	Other	13	**3 084	37.7	7	425	8.6
35512 00	Continuous bread making equipment	4	(S)	3.1	6	53	5.2
	Other bakery machinery and equipment	34	(S)	83.6	31	*6 727	60.1
	Parts and attachments for commercial food preparation machines	29	(X)	34.3	28	(X)	52.8
	Commercial food products machinery, except packaging machinery, n.s.k.	(NA)	(X)	24.3	(NA)	(X)	28.5

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1982 product code	Product	1962			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
FOOD PRODUCTS MACHINERY—Con.							
35513 —	Industrial food products machinery, except packaging machinery	(NA)	(X)	620.1	(NA)	(X)	452.0
35513 13	Meat and poultry processing and preparation machinery and equipment (killing, dehauling, stuffing, cooking, rendering, etc.)	41	(X)	131.5	31	(X)	80.6
35513 23	Fruit and vegetable canning machinery: Preparation machinery number	22	(S)	58.4	19	**4 366	53.6
35513 29	All other fruit and vegetable canning industries machinery	11	(X)	16.2	11	(X)	16.3
35513 39	Flour and grain mill machinery, except packing and packaging machinery	16	(X)	36.0	15	(X)	26.3
35513 49	Sugar plant machinery, including cane and beet mill crushers, pulverizers, crystallizers, granulators, etc.	12	(X)	46.9	6	(X)	29.6
35513 52	Other industrial food products machinery: Vegetable oil processing, oilseed crushing, and extracting machinery number	8	(S)	25.5	4	522	11.0
35513 59	Other industrial food products machinery, including fish and shellfish processing machinery	45	(S)	102.6	34	(X)	92.6
35513 67	Bottle washers and sterilizers do	17	*365	34.5	9	220	25.5
35513 83	Parts and attachments for industrial food products machinery	57	(X)	183.7	35	(X)	84.1
35513 00	Industrial food products machinery, except packaging machinery, n.s.k.	(NA)	(X)	2.8	(NA)	(X)	29.6
35514 —	Packing, packaging, and bottling machinery for industrial food products	(NA)	(X)	725.2	(NA)	(X)	491.0
35514 15	Cartoning and multipackaging machinery number	17	*2 414	39.7	10	**514	23.8
35514 22	Thermoforming and blister packaging machinery do	3	(*)	(*)	2	(*)	(*)
35514 28	Bag opening, filling, and closing machinery do	9	1 383	11.5	12	2 005	25.0
35514 29	Forming, filling, and sealing machinery, bag or pouch (must perform all three functions): Horizontal type	10	(S)	54.7	6	943	72.4
35514 30	Vertical type do	5					
35514 32	Wrapping, banding, bundling, fastening, and sleeve wrapping machinery	13	(S)	30.5			
35514 33	Shrink film packaging machinery, including shrink tunnels	4	(S)	3.2	14	6 527	38.6
35514 35	Stretch film packaging machinery	1	(*)	(*)			
35514 41	Vacuum, gas, and skin packaging machinery	5	*54	1.9	2	(*)	(*)
35514 52	Filling machinery: Dry products (free flowing and nonfree flowing, including powders)	7	767	20.4			
35514 53	Liquids (free flowing)	30	(S)	88.2	20	1 326	55.3
35514 54	Viscous products (very heavy liquids, slurries, and pumpable semisolids)	6	160	2.4			
35514 55	By count	3	283	7.6			
35514 83	Labeling, code marking, imprinting, and leaflet/coupon inserting machinery	9	*521	15.1	6	*613	13.1
35514 71	Case forming, opening, loading, unloading, and sealing machinery	16	**624	24.2	11	*1 376	20.9
35514 61	Capping, sealing, and lidding machinery, including can sealing machinery, but excluding filling machinery	14	(S)	49.6	5	299	7.9
35514 82	Accumulating, collating, feeding, and unscrambling machinery	13	(S)	35.2			
35514 83	Testing, inspecting, and weight control machinery	10	(S)	45.3	29	(S)	*109.2
35514 84	Other machinery, including combinations of machinery classified in more than one of the above	38	(S)	*109.1			
35514 91	Parts for packaging machinery	71	(X)	180.9	45	(X)	101.5
35514 00	Packing, packaging, and bottling machinery for industrial food products, n.s.k.	(NA)	(X)	5.4	(NA)	(X)	23.5
35510 00	Food products machinery, n.s.k., typically for establishments with 10 employees or more (see note)	(NA)	(X)	92.1	(NA)	(X)	103.9
35510 02	Food products machinery, n.s.k., typically for establishments with less than 10 employees (see note)	(NA)	(X)	66.4	(NA)	(X)	43.6
TEXTILE MACHINERY							
3552 —	Total	(NA)	(X)	965.5	(X)	(X)	857.1
35521 —	Textile machinery	(NA)	(X)	454.3	(X)	(X)	381.8
35521 15	Fiber-to-fabric textile machinery (except parts, attachments, and accessories): Cleaning and opening machinery, including picker, garmetting, and other thousands	12	*5.0	16.7	10	**3.6	17.6
35521 25	Carding machines and combing machines	6	(D)	(*)	6	1.1	22.2
35521 36	Drawing and roving frames	3	.4	19.0	4	.5	16.7
35521 42	Spinning frames: Frames	2	(D)	(*)	3	(*)	(*)
35521 46	Spindles	(X)	(S)	(X)	(X)	(*)	(X)
35521 47	Twisting frames: Frames	4	(S)	*11.0	2	.5	*24.4
35521 48	Spindles	(X)	3.3	(X)	(X)	7169.7	(X)
35521 51	Yarn preparing machines: Winding machines (skein, spool, bobbin, quill, cone, etc.)	10	4.8	23.3	13	9.7	36.0
35521 53	Other yarn preparing machines (beamng, warping, warp tying, warp drawing in, slashing, etc.)	6	(S)	*50.7	5	(X)	22.3
35521 55	Other fiber-to-fabric machinery	8	.5	30.2	6	(S)	11.3

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

(Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text)

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
TEXTILE MACHINERY—Con.							
35521 —	Textile machinery—Con.						
35521 67	Fabric machinery (except parts, attachments, and accessories):						
35521 71	Weaving machinery, including machinery for broad and narrow fabrics—do—	5	(S)	9.2	5	2.7	32.1
35521 81	Knitting machinery—do—	8	(S)	20.7	7	1.5	15.3
35521 82	Other fabric machinery, including lace, embroidery, braiding, and tufting machinery and hand looms—do—	17	*5.8	36.9	12	**8.9	18.5
35521 83	Bleaching, mercerizing, and dyeing machinery—do—	9	(S)	26.9	8	(X)	17.2
35521 86	Printing machinery—do—	8	.9	14.0	1	—	29.4
35521 87	Finishing machinery—do—	30	(S)	78.0	23	(X)	—
35521 88	Machinery for drying stocks, yarns, cloth, carpet, nonwoven, etc.—do—	18	(S)	25.9	12	(X)	15.1
35521 98	Other textile industries machinery, n.e.c. (except parts, attachments, and accessories)—do—	43	(S)	74.4	46	(X)	60.8
35521 00	Textile machinery, n.s.k.—do—	(NA)	(X)	17.4	(X)	(X)	22.7
35522 —	Parts and attachments for textile machinery—do—	(NA)	(X)	390.0	(X)	(X)	405.2
35522 11	Textile machinery turnings and shapes (bobbins, shuttles, spools, picker sticks, cops, etc.)—do—	18	(X)	40.2	23	(X)	50.1
	Parts and attachments:						
	Fiber-to-fabric machinery:						
35522 22	Card clothing—mil sq ft—	7	1 293.5	20.8	5	(S)	28.4
35522 31	Other fiber-to-fabric machinery, except card clothing—do—	23	(X)	81.2	17	(X)	46.7
35522 43	Weaving machines, including broad and narrow fabric—do—	24	(X)	101.9	21	(X)	108.1
35522 45	Knitting machines, excluding needles—do—	12	(X)	12.2	12	(X)	18.7
35522 72	Bleaching, mercerizing, and dyeing machinery—do—	7	(X)	3.7	7	(X)	7.5
35522 74	Finishing machinery—do—	22	(X)	19.5	15	(X)	8.8
35522 99	Other textile machinery, including printing—do—	79	(X)	89.8	85	(X)	102.7
35522 00	Parts and attachments for textile machinery, n.s.k.—do—	(NA)	(X)	20.8	(X)	(X)	36.2
35520 00	Textile machinery, n.s.k., typically for establishments with 10 employees or more (see note)—do—	(NA)	(X)	89.3	(X)	(X)	58.9
35520 02	Textile machinery, n.s.k., typically for establishments with less than 10 employees (see note)—do—	(NA)	(X)	32.0	(X)	(X)	33.4
WOODWORKING MACHINERY							
3553 —	Total—do—	(NA)	(X)	656.7	(NA)	(X)	547.3
35531 —	Woodworking machinery (except machinery designed primarily for home workshops, garages, and service shops), including parts, attachments, and accessories—do—	(NA)	(X)	327.8	(NA)	(X)	334.8
	Sawmill equipment:						
	Saws (head rigs):						
35531 11	Circular—do—	8	**1.2	9.8	—	—	—
35531 13	Band—do—	14	(S)	22.8	39	(X)	102.8
35531 15	Other sawmill equipment, except saws (head rigs)—do—	22	(X)	33.0	—	—	—
35531 17	Veneer, plywood, particle board, and hardboard-making machinery—do—	17	(X)	53.0	15	(S)	34.4
35531 62	Sawing machines, except sawmill equipment—do—	15	6.1	26.5	17	*96.0	38.1
35531 73	Straight-line machinery, including jointers, moulders, planers, sanders, surfacers, trimmers, etc. (except power-driven hand-held tools)—do—	23	**8.0	31.0	19	*11.2	25.1
35531 75	Boring machinery, carving machinery, dovetailers, mortisers, routers, shapers, and tenoners (except power-driven hand-held tools)—do—	18	(S)	18.9	12	4.0	10.3
35531 88	Other woodworking machinery (except power-driven hand-held tools), including lathes, clamping machinery, presses, and roll coaters, etc.—do—	25	(S)	26.8	23	(S)	34.2
	Parts, attachments, and accessories for woodworking machinery (sold separately), excluding saw blades:						
35531 85	Cutting tools, other than saw blades—do—	13	(X)	39.4	11	(X)	33.5
35531 87	All other parts, attachments, and accessories—do—	52	(X)	58.7	38	(X)	49.3
35531 00	Woodworking machinery, excluding home workshop and power-driven tools, n.s.k.—do—	(NA)	(X)	7.9	(NA)	(X)	8.9
35532 —	Woodworking machinery designed primarily for home workshop, garages, and service shops (except power-driven hand tools), including parts and attachments—do—	(NA)	(X)	262.6	(NA)	(X)	143.6
35532 21	Saws, including circular—do—	5	702.1	132.4	4	717.1	110.4
35532 81	Parts, attachments, and accessories for machine tools and woodworking machines designed primarily for home workshop, etc. (sold separately), except parts for power-driven hand tools (excluding saw blades)—do—	7	(X)	41.0	4	(X)	8.0
35532 88	Other machine tools and woodworking machines designed primarily for home workshops, etc. (except power-driven hand tools), including lathes, drilling machines, jointers, planers, and shapers—do—	11	255.6	84.7	6	235.4	25.2
35532 00	Woodworking machinery designed primarily for home workshop, garages and service shop (except power-driven hand tools) including parts and attachments, n.s.k.—do—	(NA)	(X)	4.5	—	(X)	—
35530 00	Woodworking machinery, n.s.k., typically for establishments with 10 employees or more (see note)—do—	(NA)	(X)	52.0	(NA)	(X)	38.8
35530 02	Woodworking machinery, n.s.k., typically for establishments with less than 10 employees (see note)—do—	(NA)	(X)	14.5	(NA)	(X)	30.4

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
PAPER INDUSTRIES MACHINERY							
3554- --	Total -----	(NA)	(X)	1 199.0	(NA)	(X)	698.3
35541 --	Paper industries machinery -----	(NA)	(X)	853.5	(NA)	(X)	(NA)
35541 11	Wood preparation equipment, including barkers, chippers, knotters, splitters, chipscreens, etc. -----	11	(X)	36.5	7	(X)	24.5
35541 21	Pulp mill machinery: Grinders (for groundwood) ----- number	2	(D)	(9)	3	*136	8.2
35541 25	Deckers, thickeners, wet lap machines, bleaching equipment, pulp screens, washers, end save alls -----	14	(X)	37.5			
35541 27	Thermomechanical pulp (TMP) refiners and related process refiners ----- number	2	(D)	(9)	10	(X)	66.6
35541 28	Other pulp mill machinery, including digesters and recovery room equipment -----	11	(NA)	982.8			
35541 31	Paper mill machinery: Beaters, jordans, disc refiners, and other stock preparation -----	7	(X)	54.6	6	(X)	17.5
35541 41	Paper machines: Fourdriniers, including yankee machines ----- number	3	(D)	(9)	4		24.3
35541 43	Cylinder type machines ----- do	2	(D)	(9)	4		
35541 45	Calenders, including supercalenders and embossers ----- do	12	(S)	*145.2	7	(S)	5.9
35541 49	Other paper machinery, including forming and finishing machinery, winders, end sheeters, but excluding calenders ----- do	24	1 879	132.4	14	**895	51.6
35541 51	Paper and paperboard converting equipment: Bagmaking machines, including shipping sack machines, and envelope making machines ----- do	9	(S)	21.4	8	*246	16.8
35541 53	Corrugated boxmaking machines, including corrugators ----- do	15	737	83.3	11	580	47.1
35541 54	Box, carton, and shipping container making machines, except corrugated box machines ----- number	10	(NA)	57.8	7	(X)	31.5
35541 56	Toilet roll, towel, and napkin making machines ----- number	4			2	(X)	(10)
35541 59	Other paper and paperboard converting equipment, including drum, can, and tube making machines and coating, laminating, and saturating machines -----	47	(X)	202.0	38	(X)	(10)
35541 00	Paper industries machinery, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	-
35542 --	Parts and attachments for paper industries machinery and rebuilt machines -----	(NA)	(X)	276.1	(NA)	(X)	(NA)
35542 73	Rebuilt paper industries machines -----	8	(X)	17.2	6	(X)	10166.3
35542 83	Parts and attachments for pulp mill machinery (sold separately) -----	16	(X)	48.3			
35542 85	Parts and attachments for paper mill machinery (sold separately) -----	31	(X)	74.5			
35542 87	Parts and attachments for paper and paperboard converting equipment (sold separately) -----	37	(X)	94.6			
35542 89	Parts and attachments for all other paper industries machinery (sold separately) -----	22	(X)	37.8			
35542 00	Parts and attachments for paper industries machinery and rebuilt machines, n.s.k. -----	(NA)	(X)	3.8	(NA)	(X)	(NA)
35540 00	Paper industries machinery, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	42.8	(X)	(X)	34.4
35540 02	Paper industries machinery, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	26.6	(X)	(X)	20.3
PRINTING TRADES MACHINERY							
3555- --	Total -----	(NA)	(X)	2 188.2	(X)	(X)	1 287.3
35551 --	Printing presses, lithographic -----	(NA)	(X)	665.0	(X)	(X)	290.9
	Sheet-fed:						
35551 01	11 in. by 17 in. up to 27 in. (excluding 27 in.) ----- complete press	6					
35551 03	27 in. through 36 in. (including 36 in. one-color) ----- do	2	(S)	48.2	(NA)	**59.9	36.5
35551 05	More than 36 in. through 48 in. (excluding 36 in. one-color) ----- do	1					
35551 08	More than 48 in. (excluding 48 in.) ----- do	1					
35551 33	Roll-fed (web-fed): Business forms ----- do	9	*299	72.3	6	409	53.4
35551 35	Commercial (including heat set) web ----- do	8	(D)	(11)	7	883	187.3
35551 32	Newspaper ----- do	7	(D)	(11)	5		
35551 36	All other ----- do	7	(S)	11542.1	4	**11	3.8
35551 00	Printing presses, lithographic, n.s.k. -----	(NA)	(X)	2.4	(X)	(X)	9.9
35552 --	Printing presses, other than lithographic -----	(NA)	(X)	148.9	(X)	(X)	121.3
35552 01	Letterpress (typographic, relief) ----- complete press	10	*327	6.6	(NA)	289	29.4
35552 37	Gravure, sheet-fed and web-fed (roll-fed) ----- do	6	(S)	16.7	4		
35552 38	Flexographic, sheet-fed and web-fed (roll-fed) ----- do	13	1 423	41.1	12	(S)	43.3
35552 41	Other printing presses, including metal decoreting, proof, and rebuilt ----- do	28	(S)	71.7	19	(S)	41.0
35552 00	Printing presses, other than lithographic, n.s.k. -----	(NA)	(X)	12.8	(X)	(X)	7.6
35553 --	Typesetting machinery (excluding justifying typewriters) -----	(NA)	(X)	303.4	(X)	(X)	252.8
	Photographic typesetting machines, including integral computer:						
35553 01	Direct entry ----- number	5	(D)	(12)			
35553 02	Media driver (non-CRT) ----- do	1	(D)	(12)			
35553 03	CRT, including laser phototypesetters ----- do	7	(S)	120.1	11	11 876	198.8
35553 04	Fonts ----- do	3	(S)	12151.9			

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
PRINTING TRADES MACHINERY—Con.							
35553 —	Typesetting machinery (excluding justifying typewriters) — Con.						
35553 11	Input editing machines (processing systems):						
35553 12	Display ed/page layout systems number--	3	(S)	20.6	7	*5 684	32.5
35553 45	Multistation copy entry (retrieved and/or composing) do--	1			6	2 020	11.4
35553 52	Keyboard input devices do--	2	(S)	9.5	3	(S)	8.4
35553 57	Hot metal typesetting machines and matrices do--	1			-	-	-
35553 00	Other typesetting machines (excluding cameras) do--	2	(S)				
	Typesetting machinery (excluding justifying typewriters), n.s.k. -----	(NA)	(X)	1.2	(X)	(X)	1.7
35556 —	Binding machinery and equipment -----	(NA)	(X)	171.6	(X)	(X)	68.4
35556 61	Saddle, perfect, and hard case (edition) binding equipment number--	6	(S)	57.1	4	422	25.9
35556 66	Paper cutting machines do--	9	(S)	12.3	2		
35556 67	Collating and/or gathering machines (sold separately) do--	8	"1 297	42.7	6	2 430	31.6
35556 65	Other binding machinery and equipment, n.e.c., including folding equipment do--	21	(S)	59.0	10	7 820	8.7
35556 00	Binding machinery and equipment, n.s.k. -----	(NA)	(X)	.5	(X)	(X)	2.2
35557 —	Printing trades machinery, n.e.c. -----	(NA)	(X)	783.4	(X)	(X)	463.2
35557 01	Prepress preparatory equipment, including photo-composing equipment, etching equipment, electrotyping and stereotyping machinery, automatic plate processors, etc. (excluding typesetting equipment and cameras) -----	20	(S)	37.3	6	(S)	13.4
35557 69	Engravers' materials and equipment, including metal plates, etc. -----	15	(X)	40.1	9	(X)	11.9
35557 72	Roll covering, rubber and plastics, graphic arts -----	32	(X)	128.1	22	(X)	78.1
35557 76	Printers' blankets -----	13	(X)	88.3	10	(X)	40.4
35557 77	Lithographic plates -----	15	(X)	43.0	4	(X)	16.0
35557 83	Parts, attachments, and accessories for printing presses (sold separately), including flying pasters, dryers, folders, and reels -----	57	(X)	295.7	46	(X)	139.8
35557 85	Parts, attachments, and accessories for typesetting machines (sold separately) -----	6	(X)	18.1	6	(X)	42.9
35557 87	Parts, attachments, and accessories for bindery equipment (sold separately) -----	9	(X)	6.9	8	(X)	7.3
35557 89	Parts, attachments, and accessories for other printing trades machinery and equipment (sold separately) -----	31	(X)	44.0	22	(X)	27.2
35557 99	Other printing trades machinery and equipment, including platen (except typewriter) -----	43	(X)	72.9	31	(X)	54.5
35557 00	Printing trades machinery, n.e.c., n.s.k. -----	(NA)	(X)	9.0	(X)	(X)	31.7
35550 00	Printing trades machinery, n.s.k., typically for establishments with 10 employees or more (see note) -----	(NA)	(X)	71.4	(X)	(X)	58.7
35550 02	Printing trades machinery, n.s.k., typically for establishments with less than 10 employees (see note) -----	(NA)	(X)	44.6	(X)	(X)	32.0
SPECIAL INDUSTRY MACHINERY, N.E.C.							
3559 —	Total -----	(NA)	(X)	5 353.7	(NA)	(X)	3 465.2
35591 —	Chemical manufacturing industries machinery, equipment, and parts: -----						
35591 00	Chemical manufacturing industries machinery, equipment, and parts -----	114	(X)	641.3	107	(X)	436.7
35592 —	Foundry machinery and equipment, excluding patterns and molds -----	(NA)	(X)	260.0	(NA)	(X)	319.2
35592 21	Foundry pouring equipment, including ladles, crucibles, and pouring machines -----	6	(X)	29.6	8	(X)	18.5
35592 33	Molding machines:						
35592 35	Green sand number--	6	114	12.0	8	(X)	33.0
35592 41	Other do--	5	(S)	20.4	5	(X)	8.7
35592 42	Foundry flasks do--	8	(S)	9.9	4	(X)	5.8
35592 54	Core-making machines do--	4	"230	5.1	8	(S)	23.7
35592 98	Blast cleaning machines (hydraulic, pneumatic, and airless) do--	10	(S)	84.7	11	5 307	66.3
35592 97	Other foundry machinery and equipment -----	34	(X)	38.6	33	(X)	63.0
35992 00	Parts for foundry machinery and equipment -----	19	(X)	47.4	28	(X)	78.0
	Foundry machinery and equipment, excluding patterns and molds, n.s.k. -----	(NA)	(X)	12.3	(NA)	(X)	22.2
35593 —	Plasticsworking machinery and equipment, excluding patterns and molds -----	(NA)	(X)	785.7	(NA)	(X)	669.6
35593 11	Compression molding machines number--	4	(S)	10.9	7	(S)	17.2
	Extrusion machines:						
35593 31	Single screw extruders:						
35593 32	Up to 2.49 in. screw diameter do--	13	(S)	22.5	9	(S)	7.8
35593 34	2.50 to 5.49 in. screw diameter do--	16	(S)	45.4	15	"928	51.0
35593 35	5.50 in. or larger screw diameter do--	12	(S)	21.4	12	"300	27.1
	Multiple screw extruders -----	5	"66	10.5	4		
35593 52	Injection molding machines:						
35593 53	500 tons or less do--	22	(S)	132.4	19	2 478	161.2
35593 54	501 to 1,200 tons do--	9	(S)	45.8	11	(S)	81.0
	1,201 tons or more do--	2			3	35	16.4

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
SPECIAL INDUSTRY MACHINERY, N.E.C.—Con.							
35593 --	Plasticsworking machinery and equipment, excluding patterns and molds —Con.						
35593 61	Blow molding machines number	13	(S)	53.9	5	172	16.4
35593 71	Granulators and pelletizers do	15	(S)	48.1	8	*1 285	41.6
35593 72	Thermoforming machines do	7	*501	20.8	10	(S)	33.6
35593 79	Other plastics-working machinery and equipment	83	(X)	204.0	74	(X)	195.4
35593 81	Parts for plasticsworking machinery	48	(X)	132.1			
35593 00	Plasticsworking machinery and equipment, excluding patterns and molds, n.s.k.		(NA)	(X)	37.9	(NA)	(X)
35594 --	Rubberworking machinery and equipment, excluding tire molds		(NA)	(X)	167.0	(NA)	(X)
35594 11	High-intensity solids mixers number	6	(X)	9.2	5	(X)	6.5
35594 31	Extruding machines number	6	*222	14.9	6	(X)	(X)
35594 51	Tire building equipment, except tire molds	15	(X)	60.0	13	(X)	34.0
35594 71	Tire recapping and repairing machinery and equipment, including recapping vulcanizers	10	(X)	29.0	7	(X)	11.1
35594 79	Other rubberworking machinery, including calendering machines and vulcanizing presses, but excluding tire molds	22	(X)	42.5	(X)	(X)	(X)
35594 61	Parts for rubberworking machinery	14	(X)	24.5	126	(X)	1394.8
35594 00	Rubberworking machinery and equipment, excluding tire molds, n.s.k.		(NA)	(X)	6.9	(NA)	(X)
35595 --	Special industry machinery and equipment, n.e.c.		(NA)	(X)	2 933.5	(NA)	(X)
35595 11	Petroleum refinery machinery, equipment, including parts and parts	43	(X)	302.6	21	(X)	1 565.3
35595 21	Ammunition and explosives loading machinery, equipment, and parts	9	(X)	34.5	4	(X)	109.6
35595 32	Tobacco manufacturing machinery, equipment, and parts	13	(X)	39.6	6	(X)	21.1
35595 41	Clayworking machinery, equipment, and parts (brick, tile, and ceramics)	25	(X)	47.2	12	(X)	15.6
35595 43	Cementmaking machinery, equipment, and parts, other than cement kilns	7	(X)	11.6	12	(X)	22.7
35595 45	Concrete products machinery and equipment:						
35595 49	Concrete-block machines number	7	577	32.6	5	(X)	4.8
35595 52	Other concrete products machinery, equipment, and parts, including concrete-pipemaking machines number	22	(X)	56.3	16	(X)	73.9
35595 62	Glassmaking machinery, equipment, and parts number	39	(S)	194.9	22	(X)	99.4
35595 73	Shoemaking and repairing machinery, equipment, and parts, including sole stitching machines	13	(X)	52.9	11	(X)	34.6
	Cotton-ginning machinery, equipment, and parts number	13	(S)	58.1	7	(X)	59.1
	Metal cleaning, degreasing, finishing, and drying machinery, equipment, and parts:						
35595 82	Metal finishing equipment, except rolling mill:						
35595 83	Vibratory finishing machines and parts do	12	(S)	17.2	9	(S)	14.9
35595 84	Deburring and barrel tumbling equipment and parts do	13	*2 470	19.6	6	(S)	9.6
35595 86	Pickling equipment and parts do	3	(D)	(14)	2	(S)	12.5
35595 87	Plating equipment and parts do	34	(S)	115.9	8	(S)	**5 935
35595 88	Metal degreasing machinery and parts do	17	(S)	48.2	18	(S)	26.2
35595 89	Metal drying machinery and parts do	7	(S)	6.4	6	(S)	5.2
35595 92	Electronic tubemaking machinery, equipment, and parts do	6	(S)	17.4	(15)	(15)	(15)
35595 94	Fuel fired kilns (cement, wood, and chemical processing) and parts do	13	(S)	21.2	7	(S)	42.6
35595 95	Desalination equipment and parts	8	(X)	134.4	(16)	(16)	(16)
35595 96	Semiconductor manufacturing machinery (except ovens) and parts	84	(X)	815.3	(15)	(15)	(15)
35595 98	Electroplating machinery (except rolling mill lines) and parts	14	(X)	47.8	(15)	(15)	(15)
35595 00	Other special industrial machinery, equipment, and parts, including incandescent lampmaking, stoneworking, hatmaking, leatherworking, jewelers', etc.		366 (NA)	(X)	14795.2	15254 (NA)	(NA)
35590 00	Special industry machinery, n.e.c., n.s.k., typically for establishments with 10 employees or more (see note)		(NA)	(X)	64.5	(NA)	(X)
35590 02	Special industry machinery, n.e.c., n.s.k., typically for establishments with less than 10 employees (see note)		(NA)	(X)	415.2	(NA)	(X)
			(NA)	(X)	131.0	(NA)	(X)
							113.1

Note: In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

¹Data reported by all producers, not just those with shipments of \$100,000 or more.

²For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

³For 1977, data for product codes 35514 22, 35514 41, 35514 82, 35514 83, 35514 84 were combined to avoid disclosing data for individual companies.

⁴For 1982, data for product codes 35514 22, 35514 35, and 35514 84 are combined to avoid disclosing data for individual companies.

⁵For 1982, data for product code 35521 25 have been combined with product code 35521 53 to avoid disclosing data for individual companies.

⁶For 1977 and 1982, product code 35521 42 has been combined with product code 35521 47 to avoid disclosing data for individual companies.

⁷For 1977, product code 35521 48 has been combined with product code 35521 48 to avoid disclosing data for individual companies.

⁸For 1982, product codes 35541 21, 35541 27, and 35541 28 are combined to avoid disclosing data for individual companies.

⁹For 1982, product codes 35541 41, 35541 43, and 35541 45 are combined to avoid disclosing data for individual companies.

¹⁰For 1977, product codes 35541 58, 35541 59, and 35542 73 were combined to avoid disclosing data for individual companies.

¹¹For 1982, product codes 35551 35, 35551 32, and 35551 36 are combined to avoid disclosing data for individual companies.

¹²For 1982, product codes 35553 01, 35553 02, and 35553 04 are combined to avoid disclosing data for individual companies.

¹³For 1977, data for product codes 35594 31 and 35594 79 were included with product code 35594 81.

¹⁴For 1982, product codes 35595 84 and 35595 98 are combined to avoid disclosing data for individual companies.

¹⁵For 1977, data for product codes 35595 65, 35595 94, 35595 95, 35595 96, and 35595 98 were combined.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments	Product class and geographic area	1982 value of product shipments	1977 value of product shipments
35511, DAIRY AND MILK PRODUCTS PLANT MACHINERY			35522, PARTS AND ATTACHMENTS FOR TEXTILE MACHINERY		
United States	176.4	128.5	United States	390.0	405.2
California	3.8	(CC)	Connecticut	2.6	1.7
Wisconsin	57.6	39.9	Georgia	17.2	16.4
			Massachusetts	19.1	60.3
			New Hampshire	7.5	10.1
			New Jersey	5.2	4.9
35512, COMMERCIAL FOOD PRODUCTS MACHINERY			New York	16.0	21.9
United States	479.7	357.2	North Carolina	112.5	96.2
California	30.7	19.8	Pennsylvania	9.6	19.6
Connecticut	9.1	11.9	Rhode Island	31.4	(FF)
Florida	4.6	(CC)	South Carolina	135.1	130.8
Georgia	35.1	7.5	Tennessee	12.1	6.1
Illinois	64.7	42.1			
Indiana	43.8	33.6	35531, WOODWORKING MACHINERY, EXCEPT FOR HOME WORKSHOP		
Kentucky	4.3	2.5	United States	327.6	334.6
Minnesota	13.1	8.4	California	7.2	12.6
Missouri	3.8	3.6	Georgia	2.1	(AA)
New Jersey	11.1	4.4	Illinois	20.6	22.7
New York	16.7	7.5	Indiana	8.8	6.6
Ohio	97.6	103.9	Michigan	12.0	10.8
Pennsylvania	27.8	23.3			
Texas	7.4	7.0	Minnesota	30.0	15.7
Wisconsin	14.2	12.1	North Carolina	15.5	12.1
			Oregon	45.0	68.7
			Pennsylvania	10.1	14.3
			Tennessee	8.9	(EE)
35513, INDUSTRIAL FOOD PRODUCTS MACHINERY			Texas	3.8	6.8
United States	620.1	452.0	Washington	32.5	28.4
California	71.0	73.4	Wisconsin	31.8	20.7
Connecticut	17.5	9.4			
Florida	19.9	21.3	35541, PAPER INDUSTRIES MACHINERY		
Georgia	27.1	19.5	United States	853.5	(NA)
Illinois	39.2	31.8	Alabama	7.9	(NA)
Indiana	2.2	(CC)	Georgia	11.7	(NA)
Iowa	26.1	25.1	Kansas	7.6	(NA)
Louisiana	9.2	(EE)	Maryland	16.7	(NA)
Massachusetts	11.1	7.9	Massachusetts	93.3	(NA)
Minnesota	19.0	8.5			
New Jersey	6.0	(AA)	New Hampshire	36.3	(NA)
New York	14.1	7.9	New Jersey	70.8	(NA)
North Carolina	10.2	2.4	New York	71.2	(NA)
Ohio	82.9	52.8	Ohio	22.8	(NA)
Pennsylvania	17.1	3.9	Oklahoma	5.8	(NA)
Texas	16.7	9.6	Oregon	7.8	(NA)
Virginia	10.9	(AA)	Pennsylvania	36.2	(NA)
Washington	10.8	7.4	Wisconsin	337.5	(NA)
Wisconsin	81.6	60.8			
			35542, PARTS FOR PAPER INDUSTRIES MACHINERY		
			United States	276.1	(NA)
35514, PACKING, PACKAGING, AND BOTTLING MACHINERY			Connecticut	2.7	(NA)
United States	725.2	491.0	Georgia	2.0	(NA)
California	124.6	66.2	Massachusetts	29.3	(NA)
Florida	40.0	(CC)	New Hampshire	37.0	(NA)
Georgia	23.4	18.8	New Jersey	17.8	(NA)
Illinois	81.2	50.2			
Indiana	15.4	(AA)	New York	33.2	(NA)
Massachusetts	39.3	44.0	Ohio	21.4	(NA)
Minnesota	10.5	13.0	Oregon	4.8	(NA)
New Jersey	19.2	17.3	Pennsylvania	37.4	(NA)
New York	22.2	26.4	Wisconsin	42.6	(NA)
Ohio	62.4	46.1			
Pennsylvania	45.7	16.4	35551, PRINTING PRESSES, LITHOGRAPHIC		
Texas	13.8	(CC)	United States	665.0	290.9
Virginia	6.5	(BB)	Illinois	32.6	(FF)
Washington	7.0	1.1	New York	44.4	20.4
Wisconsin	54.1	45.1	Ohio	51.4	(FF)
35521, TEXTILE MACHINERY			35552, PRINTING PRESSES, OTHER THAN LITHOGRAPHIC		
United States	454.3	361.6	United States	148.9	121.3
California	2.5	.8	Massachusetts	16.3	(CC)
Georgia	24.3	17.2	New Jersey	25.9	42.0
Massachusetts	29.4	30.8	New York	9.8	3.8
New Jersey	18.7	14.5	Wisconsin	21.3	13.0
New York	39.2	21.7			
North Carolina	105.3	85.7	35553, TYPESETTING MACHINERY		
Pennsylvania	12.9	14.7	United States	303.4	252.8
Rhode Island	20.3	23.4			
South Carolina	105.8	62.1	Ohio	3.0	(NA)
Tennessee	19.9	23.0			
Virginia	4.0	4.3			

See footnotes at end of table.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments	Product class and geographic area	1982 value of product shipments	1977 value of product shipments
35556, BINDING MACHINERY AND EQUIPMENT			35593, PLASTICSWORKING MACHINERY		
United States	171.6	68.4	United States	785.7	669.6
California	11.3	(NA)	California	17.8	10.1
Illinois	32.6	(NA)	Connecticut	48.9	45.6
Kansas	11.0	(NA)	Illinois	24.5	13.0
			Indiana	22.6	(CC)
			Iowa	2.5	(NA)
			Massachusetts	132.6	90.4
			Michigan	78.3	41.5
			New Hampshire	14.9	(FF)
			New Jersey	59.2	58.5
			New York	28.0	49.7
			North Carolina	5.3	2.3
			Ohio	205.6	230.5
			Pennsylvania	59.1	33.4
			Rhode Island	10.3	(EE)
			Texas	8.7	2.9
			Wisconsin	26.7	12.7
35557, PRINTING TRADES MACHINERY, N.E.C.			35594, RUBBERWORKING MACHINERY		
United States	783.4	463.2	United States	187.0	158.1
California	31.6	(NA)	California	6.8	(AA)
Florida	25.4	(NA)	Michigan	14.7	(CC)
Georgia	9.9	(NA)	New Jersey	4.0	(AA)
Illinois	96.2	(NA)	North Carolina	8.6	6.2
Indiana	18.6	(NA)	Ohio	92.1	103.5
Kentucky	7.9	(NA)			
Massachusetts	105.3	(NA)	35595, SPECIAL INDUSTRY MACHINERY, N.E.C.		
Michigan	11.4	(NA)	United States	2 933.5	1 565.3
Missouri	10.9	(NA)	Arizona	29.4	5.0
New Jersey	67.9	(NA)	Arkansas	5.5	(BB)
New York	51.9	(NA)	California	653.7	166.7
North Carolina	26.0	(NA)	Connecticut	126.0	59.9
Ohio	48.5	(NA)	Florida	32.8	26.8
Pennsylvania	55.3	(NA)	Georgia	34.1	28.9
Tennessee	7.1	(NA)	Illinois	138.7	101.2
Texas	60.8	(NA)	Indiana	97.9	60.6
Virginia	26.2	(NA)	Kansas	16.1	20.4
Wisconsin	34.9	(NA)	Kentucky	49.4	(CC)
35591, CHEMICAL MANUFACTURING MACHINERY			Maryland	28.3	13.8
United States	641.3	436.7	Massachusetts	10.8	22.8
California	17.1	10.6	Michigan	235.1	80.3
Illinois	43.9	34.1	Minnesota	112.2	71.1
Messachusetts	77.5	28.2	Missouri	63.1	40.7
New Jersey	87.5	54.6	New Hampshire	16.6	15.2
North Carolina	9.2	(BB)	New Jersey	30.1	(AA)
Ohio	59.1	44.1	New York	89.4	73.0
Pennsylvania	56.0	31.7	North Carolina	251.4	101.2
Texas	7.5	4.5	Ohio	22.9	16.3
35592, FOUNDRY MACHINERY			Oklahoma	166.5	126.3
United States	260.0	319.2	Oregon	115.8	70.1
California	3.1	9.5	Pennsylvania	4.2	18.8
Illinois	21.8	54.0	Rhode Island	164.6	135.4
Michigan	45.7	35.4	Tennessee	10.9	2.0
New Jersey	3.4	1.2	Texas	17.5	11.7
New York	4.6	1.1	Virginia	166.9	123.1
Ohio	38.8	56.4	Washington	15.4	17.0
Pennsylvania	16.9	31.4	Wisconsin	51.0	28.1
Wisconsin	9.9	12.4		92.2	66.4

Note: For 1977, the following value ranges (in million dollars) substitute for actual figures withheld to avoid disclosing data for individual companies: AA—less than \$2.0 but not 0; BB—\$2.0 to \$4.9; CC—\$5.0 to \$9.9; EE—\$10.0 to \$19.9; FF—\$20.0 to \$49.9; GG—\$50.0 or more.

Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Product class	1982	1981 ¹	1980 ¹	1979 ¹	1978 ¹	1977	1972	1967
3551-35511	Food products machinery	2 159.8	2 172.8	2 159.3	2 051.9	1 955.3	1 576.2	867.2	689.9
35511	Dairy and milk products plant machinery	176.4	176.8	204.9	196.2	175.5	128.5	57.4	
35512	Commercial food products machinery	479.7	497.2	542.7	466.4	400.9	357.2	185.0	615.3
35513	Industrial food products machinery	620.1	517.6	495.5	510.0	543.9	452.0	296.2	
35514	Peeling, packaging, and bottling machinery	725.2	836.7	792.7	759.5	673.7	491.0	232.1	
35510	Food products machinery, n.s.k.	158.5	144.6	123.5	119.7	(S)	147.5	96.5	74.7
3552-35521	Textile machinery	965.5	1 144.5	1 123.2	1 057.3	948.7	857.1	738.1	652.6
35521	Textile machinery	454.3	469.4	474.2	453.4	418.0	361.6	373.8	348.8
35522	Parts and attachments for textile machinery	390.0	586.7	571.3	542.4	456.1	405.2	305.7	267.4
35520	Textile machinery, n.s.k.	121.3	88.3	77.7	61.4	(S)	90.3	58.6	36.4
3553-35531	Woodworking machinery	656.7	742.6	693.3	675.7	645.8	547.3	339.5	210.6
35531	Woodworking machinery, except for home workshop	327.5	444.8	436.7	491.2	441.7	334.6	270.4	167.4
35532	Woodworking machinery for home workshop	262.6	245.4	204.2	135.3	155.6	143.6	51.5	29.1
35530	Woodworking machinery, n.s.k.	66.5	52.4	52.3	49.2	(S)	69.2	17.6	14.1

See footnotes at end of table.

Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years—Con.

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Product class	1982	1981 ¹	1980 ¹	1979 ¹	1978 ¹	1977	1972	1967
3554- 35541 35542 35540	Paper industries machinery Paper industries machinery Parts for paper industries machinery Paper industries machinery, n.s.k.	1 199.0 853.5 276.1 69.4	1 176.7 1 176.7 1 176.6 1 017.2	1 176.6 1 017.2	1 017.2 798.6 798.6 698.3	798.6 290.9 121.3 90.2	898.3 156.0 104.1 337.0	301.4 381.4 381.4 38.1	515.1 515.1 515.1 38.1
3555- 35551 35552 35553 35556 35557 35550	Printing trades machinery Printing presses, lithographic Printing presses, other than lithographic Typesetting machinery Binding machinery and equipment Printing trades machinery, n.e.c. Printing trades machinery, n.s.k.	2 188.2 665.0 148.9 303.4 171.6 783.4 116.0	2 285.5 601.1 248.0 362.7 937.7 829.1 136.0	2 052.7 546.5 204.5 357.1 714.4 576.7 115.6	1 745.9 410.1 170.6 363.5 321.9 68.4 87.3	1 536.3 367.4 155.5 325.8 104.1 463.2 (S)	1 287.3 290.9 121.3 104.1 337.0 90.7 49.3	736.6 156.0 90.2 (NA) (NA) 337.0 38.1	656.0 263.6 (NA) (NA) 337.0 38.1
3559- 35591 35592 35593 35594 35595 35590	Special Industry machinery, n.e.c. Chemical manufacturing machinery Foundry machinery Plasticsworking machinery Rubberworking machinery Special industry machinery, n.e.c. Special industry machinery, n.e.c., n.s.k.	5 353.7 641.3 260.0 785.7 187.0 2 933.5 546.2	5 297.2 563.7 342.1 963.3 157.7 2 897.2 373.2	4 996.5 582.2 410.8 878.8 172.8 2 662.0 290.0	4 482.1 518.7 410.2 939.3 163.4 2 146.9 303.7	3 944.6 453.5 358.4 822.6 162.5 1 869.1 (S)	3 465.2 436.7 319.2 669.6 158.1 1 565.3 316.2	2 295.9 212.5 132.3 434.1 137.3 1 210.2 169.5	1 670.3 284.5 143.9 247.6 116.6 778.6 99.0

¹Figures are estimates derived from a representative sample of manufacturing establishments canvassed in annual survey of manufactures and, therefore, may differ from results that would be obtained from a complete canvass of all manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures volumes for this period.

Table 7. Materials Consumed by Kind: 1982 and 1977

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3551, FOOD PRODUCTS MACHINERY					
	Materials, parts, containers, and supplies	(X)	848.0	(X)	636.4
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331011	Bars and bar shapes	1,000 s tons..	(S)	29.2	(S)
331012	Sheet and strip	do	**35.8	26.3	**30.7
331013	Plates	do	(S)	22.4	(S)
331015	Structural shapes	do	*26.2	16.7	(S)
331019	All other carbon steel mill shapes and forms	do	1.9	.6	5.7
331020	Alloy steel, except stainless	do	**8.9	10.5	**10.4
	Stainless steel:				
331033	Sheet and strip	do	(S)	50.9	**16.2
331050	All other stainless steel mill shapes and forms	do	(S)	45.5	**11.4
335105	Copper and copper-base alloy mill shapes and forms	million lb	6.6	10.2	(S)
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil	do	**8.7	11.9	(S)
335006	All other aluminum mill shapes and forms (extruded shapes, wire, rod, bar, powder, tubing, etc.)	do	12.1	15.6	(S)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased	1,000 s tons..	(S)	27.6	(S)
332045	Produced and consumed	do	(S)	(X)	15.9
	Steel:				
	Purchased	do	(S)	19.8	**6.1
336100	Produced and consumed	do	.3	(X)	(S)
	Aluminum and aluminum-base alloy:				
	Purchased	million lb	(S)	15.3	17.0
336200	Produced and consumed	do	.4	(X)	(S)
	Copper and copper-base alloy:				
	Purchased	do	*6.3	9.7	(S)
336902	Produced and consumed	do	.1	(X)	(S)
	Other nonferrous:				
	Purchased	do	*4.5	7.8	(X)
362115	Produced and consumed	do	(Z)	(X)	(X)
	Electric motors and generators:				
	Fractional horsepower electric motors (less than 1 hp), excluding timing motors:				
	Purchased	thousands..	(S)	25.4	*178.4
362120	Produced and consumed	do	3.0	(X)	(S)
	Integral horsepower motors and generators (1 hp or more):				
	Purchased	do	(S)	33.1	(S)
	Produced and consumed	do	.9	(X)	(S)
	Bearings:				
356218	Ball		(X)	15.8	(X)
356201	Roller		(X)	13.3	(X)
356810	Plain bearings and bushings		(X)	8.2	(X)
356601	Speed changers, drives, gears, and industrial high speed drives		(X)	23.3	(X)
360101	Electrical transmission, distribution, and control equipment		(X)	27.4	(X)
344301	Metal tanks, heat exchangers, steam condensers and other boiler products, fabricated steel plate, and weldments		(X)	16.8	(X)
349421	Fluid power (hydraulic and pneumatic) valves		(X)	8.5	(X)
349461	Fluid power (hydraulic and pneumatic) hose or tube fittings and assemblies		(X)	7.8	(X)
359922	Hydraulic and pneumatic equipment (except pumps, compressors, valves, cylinders, and rotary actuators)		(X)	7.8	(X)
356120	Hydraulic fluid power pumps, motors, and hydrostatic transmissions	thousands..	**30.7	7.1	(X)
970099	All other materials and components, parts, containers, and supplies consumed		(X)	7.6	(X)
			205.4	(X)	3241.8

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3551, FOOD PRODUCTS MACHINERY —Con.				
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	128.3	(X)	139.6
	INDUSTRY 3552, TEXTILE MACHINERY				
	Materials, parts, containers, and supplies	(X)	365.5	(X)	331.7
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331011	Bars and bar shapes	1,000 s tons	(S)	19.1	**20.6
331012	Sheet and strip	do	(S)	8.5	(S) 6.4
331015	Structural shapes	do	15.3	7.0	**11.4 5.4
331017	Wire and wire products	do	(S)	15.1	(S) 9.1
331056	All other carbon steel mill shapes and forms	do	6.4	6.6	(S) 3.2
331020	Alloy steel, except stainless	do	2.5	2.4	**.9 1.0
331031	Stainless steel mill shapes and forms	do	(S)	9.6	*3.3 8.9
335105	Copper and copper-base alloy mill shapes and forms	million lb	(S)	1.4	**.4 .5
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil	do	(S)	4.8	5.4
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	do	**6.6	5.1	3.5
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.)	do	(S)	5.9	(S) .6
	Primary metal and scrap:				
331051	Pig iron, excluding silvery iron	1,000 s tons	*1.3	.3	(*)
190023	Iron and steel scrap, excluding home scrap	do	1.8	.7	46.7 41.2
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased	do	(S)	24.3	**21.1
	Produced and consumed	do	(S)	(X)	(S) 26.6
332045	Steel:				
	Purchased	do	*1.0	1.8	(X) (6)
	Produced and consumed	do	(Z)	(X)	(X)
336100	Aluminum and aluminum-base alloy:				
	Purchased	million lb	*6.1	8.7	**5.8 5.5
	Produced and consumed	do	(Z)	(X)	(S) (X)
336200	Copper and copper-base alloy:				
	Purchased	do	(S)	(*)	(X) (6)
	Produced and consumed	do	-	(X)	(X)
336902	Other nonferrous:				
	Purchased	do	(S)	*4.8	(X) (6)
	Produced and consumed	do	(Z)	(X)	(X) (X)
362120	Integral horsepower electric motors and generators (1 hp or more):				
	Purchased	thousands	**73.9	9.4	(S) 10.2
	Produced and consumed	do	(Z)	(X)	(S) (X)
	Bearings:				
356218	Ball		(X)	7.2	(X) 4.5
356201	Roller		(X)	5.0	(X) 2.7
356810	Plain bearings and bushings		(X)	3.8	(X) 1.8
356023	Speed reducers, gears, drives, and other mechanical power transmission equipment, except bearings		(X)	14.3	(X) 6.7
307902	Fabricated plastics products, except gaskets		(X)	4.8	(X) 3.5
360101	Electrical control and distribution equipment, including coils, switches, relays, regulators, motor controls, etc.		(X)	17.7	(X) 10.7
970099	All other materials and components, parts, containers, and supplies consumed		(X)	87.7	(X) 123.8
971000	Materials, parts, containers, and supplies, n.s.k. ²		(X)	90.9	(X) 83.2
	INDUSTRY 3553, WOODWORKING MACHINERY				
	Materials, parts, containers, and supplies		(X)	298.4	(X) 248.0
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331011	Bars and bar shapes	1,000 s tons	(S)	11.4	(S) 8.8
331012	Sheet and strip	do	33.0	18.7	**27.7 10.7
331013	Plates	do	*15.1	7.3	(S) 3.9
331053	All other carbon steel mill shapes and forms	do	10.4	7.1	**7.2 3.0
331020	Alloy steel, except stainless	do	**3.8	6.6	*6.8 3.3
	Stainless steel:				
331033	Sheet and strip	do	(7)	(7)	(7) (7)
331050	All other stainless steel mill shapes and forms	do	72.7	75.8	(7) 7.1
335001	Aluminum and aluminum-base alloy	million lb	1.6	1.3	(S) .8
335609	Nonferrous metal mill shapes and forms, except copper and aluminum	1,000 s tons	**.6	.7	*.3 .7
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased	do	18.6	21.1	28.6
	Produced and consumed	do	.1	(X)	(S) (X)
332045	Steel:				
	Purchased	do	(S)	4.1	*2.6 7.2
	Produced and consumed	do	-	(X)	(S) (X)
336100	Aluminum and aluminum-base alloy:				
	Purchased	million lb	12.8	17.5	11.8 12.1
	Produced and consumed	do	2.2	(X)	(S) (X)
336200	Copper and copper-base alloy:				
	Purchased	do	(8)	(8)	(X) (8)
	Produced and consumed	do	-	(X)	(X) (X)
336902	Other nonferrous:				
	Purchased	do	*6.2	*9.1	(X) (8)
	Produced and consumed	do	-	(X)	(X) (X)
346200	Iron and steel forgings:				
	Purchased	1,000 s tons	(10)	(10)	(Z) .1
	Produced and consumed	do	-	(X)	(S) (X)

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3553, WOODWORKING MACHINERY—Con.				
362115	Electric motors and generators: Fractional horsepower electric motors (less than 1 hp), excluding timing motors:				
	Purchased	thousands	(10)	(10)	(8)
	Produced and consumed	do	(Z)	(X)	(X)
362120	Integral horsepower motors and generators (1hp or more):				
	Purchased	do	(S)	11.4	409.6
	Produced and consumed	do	(Z)	(X)	(S)
356218	Bearings: Ball		(X)	8.1	(X)
356201	Roller		(X)	5.2	(X)
329903	Industrial diamonds	carats	(S)	.1	(X)
349421	Fluid power (hydraulic and pneumatic) valves		(X)	2.9	(X)
349461	Fluid power (hydraulic and pneumatic) hose or tube fittings and assemblies		(X)	1.8	(X)
356120	Pumps (complete assemblies): Hydraulic fluid power pumps, motors, and hydrostatic transmissions	thousands	(S)	2.8	(X)
356102	Other pumps	do	(S)	(Z)	(9)
356301	Air and gas compressors (except refrigeration compressors)	do	(10)	(10)	(9)
356921	Filters for hydraulic fluid power systems		(X)	1.8	(X)
359921	Fluid power (hydraulic and pneumatic) cylinders and rotary actuators		(X)	1.2	(X)
359922	Hydraulic and pneumatic equipment (except pumps, compressors, cylinders, and rotary actuators)		(X)	3.0	(X)
360101	Electrical transmission, distribution, and control equipment, etc.		(X)	6.8	(X)
265001	Paperboard containers, boxes, and corrugated paperboard	1,000 s tons	*22.7	8.7	5.7
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets		(X)	3.2	(X)
307902	Fabricated plastics products, except gaskets		(X)	9.3	(11)
970099	All other materials and components, parts, containers, and supplies		(X)	1077.9	112.5
971000	Materials, parts, containers, and supplies, n.s.k. ²		(X)	43.3	53.3
	INDUSTRY 3554, PAPER INDUSTRIES MACHINERY				
	Materials, parts, containers, and supplies		(X)	479.2	(X)
	Mill shapes and forms, except castings and forgings:				298.4
	Carbon steel:				
331011	Bars and bar shapes	1,000 s tons	35.1	24.8	(S)
331013	Plates	do	31.1	21.1	(S)
331057	All other carbon steel mill shapes and forms	do	14.3	18.6	(S)
331020	Alloy steel, except stainless	do	16.0	16.8	(S)
	Stainless steel:				
331033	Sheet and strip	do	*4.0	15.0	(S)
331050	All other stainless steel mill shapes and forms	do	**5.1	13.3	(S)
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes	million lb	2.9	10.7	(S)
335143	Plate, sheet, and strip, including military cups and discs	do	2.3	4.7	(S)
335152	Pipe and tube	do	5.1	15.5	(S)
	Primary metals and scrap:				
331051	Pig iron, excluding silvery iron	1,000 s tons			
190023	Iron and steel scrap, excluding home scrap	do	23.2	13.4	[]
	Castings (rough and semifinished):				
332011	Iron (gray and malleable): Purchased	do	17.8	27.8	*14.6
	Produced and consumed	do	(S)	(X)	3.5
332045	Steel:				
	Purchased	do	*10.6	24.2	(S)
	Produced and consumed	do	-	(X)	(S)
336100	Aluminum and aluminum-base alloy:				
	Purchased	million lb	**1.0	2.6	(X)
	Produced and consumed	do	-	(X)	(X)
336200	Copper and copper-base alloy:				
	Purchased	do	*2.0	3.5	(X)
	Produced and consumed	do	-	(X)	(X)
336902	Other nonferrous:				
	Purchased	do	.4	.8	(X)
	Produced and consumed	do	-	(X)	(X)
362120	Integral horsepower electric motors and generators (1 hp or more):				
	Purchased	thousands	29.1	18.7	(S)
	Produced and consumed	do	.2	(X)	(X)
349421	Fluid power (hydraulic and pneumatic) valves		(X)	3.7	(X)
349461	Fluid power (hydraulic and pneumatic) hose or tube fittings and assemblies		(X)	3.0	(X)
356120	Hydraulic fluid power pumps, motors, and hydrostatic transmissions	thousands	**10.9	4.7	(X)
	Bearings:				
356218	Ball		(X)	7.8	(X)
356201	Roller		(X)	12.6	(X)
356810	Plain bushings and bearings		(X)	6.0	(X)
356601	Speed changers, drives, gears, and industrial high speed drives		(X)	17.2	(X)
356921	Filters for hydraulic fluid power systems		(X)	.4	(X)
359921	Fluid power (hydraulic and pneumatic) cylinders and rotary actuators		(X)	3.7	(X)
360101	Electrical transmission, distribution, and control equipment		(X)	13.6	(X)
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets		(X)	6.3	(X)
970099	All other materials and components, parts, containers, and supplies		(X)	135.0	(X)
971000	Materials, parts, containers, and supplies, n.s.k. ²		(X)	33.7	(X)

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977		
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)	
INDUSTRY 3555, PRINTING TRADES MACHINERY						
Materials, parts, containers, and supplies -----						
		(X)	786.8	(X)	452.7	
Mill shapes and forms, except castings and forgings:						
Carbon steel:						
331011	Bars and bar shapes ----- 1,000 s tons	*44.9	38.5	**15.6	12.1	
331012	Sheet and strip ----- do	*22.4	19.2	**2.7	2.3	
331013	Plates ----- do	37.0	26.5	**4.7	3.3	
331053	All other carbon steel mill shapes and forms ----- do	15.1	20.2	(S)	3.2	
Alloy steel, except stainless:						
331021	Bars and bar shapes ----- do	*16.9	19.4	(S)	3.3	
331029	All other alloy steel mill shapes and forms ----- do	**5.7	8.7	(S)	.9	
Stainless steel:						
331033	Sheet and strip ----- do	*6.3	10.9	(S)	.7	
331050	All other stainless steel mill shapes and forms ----- do	*4.3	14.1	(S)	1.3	
Copper and copper-base alloy:						
335792	Insulated copper wire and cable, except magnet wire (quantity of copper content) ----- million lb	2.7	7.5	(S)	1.0	
335728	Bare wire, for electrical conduction only ----- do	(S)	1.7	(S)	.1	
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- do	3.6	7.4	(S)	.8	
335143	Plate, sheet, and strip, including military cups and discs ----- do	17.6	19.3	**7	.6	
335152	Pipe and tube ----- do			(S)	.2	
Aluminum and aluminum-base alloy:						
335301	Sheet, plate, and foil ----- do	18.1	26.7	**7.4	12.3	
335006	All other aluminum mill shapes and forms (extruded shapes, wire, rod, bar, powder, tubing, etc.) ----- do	5.6	11.1	(S)	1.5	
Castings:						
332011	Iron (gray and malleable): Purchased ----- 1,000 s tons	44.1	61.1	(S)	23.3	
332045	Produced and consumed ----- do	(S)	(X)	(S)	(X)	
332045	Steel: Purchased ----- do	*11.5	18.9	(X)	(S)	
336100	Produced and consumed ----- do	-	(X)	(X)	(X)	
Aluminum and aluminum-base alloy:						
336200	Purchased ----- million lb	10.3	20.5	(S)	6.4	
336200	Produced and consumed ----- do	(Z)	(X)	(S)	(X)	
Copper and copper-base alloy:						
336902	Purchased ----- do	(*)	(*)	(X)	(S)	
336902	Produced and consumed ----- do	-	(X)	(X)	(X)	
Other nonferrous:						
362115	Purchased ----- do	682.7	37.5	(X)	(S)	
362115	Produced and consumed ----- do	-	(X)	(X)	(X)	
Electric motors and generators:						
Fractional horsepower electric motors (less than 1 hp), excluding timing motors:						
362120	Purchased ----- thousands	**403.0	31.8	**50.7	6.0	
362120	Produced and consumed ----- do	.1	(X)	(S)	(X)	
Integral horsepower motors and generators (1 hp or more):						
356218	Purchased ----- do	*32.8	20.4	(S)	10.5	
356201	Produced and consumed ----- do	(Z)	(X)	(S)	(X)	
356810	Bearings:					
356601	Ball -----	(X)	18.3	(X)	3.6	
356601	Roller -----	(X)	10.0	(X)	2.7	
356601	Plain bearings and bushings -----	(X)	16.2	(X)	1.3	
356601	Speed changers, drives, gears, and industrial high speed drives -----	(X)	23.7	(X)	6.8	
360101	Electrical transmission, distribution, and control equipment -----	(X)	109.1	(X)	52.6	
970099	All other materials and components, parts, containers, and supplies consumed -----	(X)	123.2	(X)	191.8	
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	64.8	(X)	104.1	
INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.						
Materials, parts, containers, and supplies -----						
		(X)	1 919.3	(X)	1 332.0	
Mill shapes and forms, except castings and forgings:						
Carbon steel:						
331011	Bars and bar shapes ----- 1,000 s tons	(S)	50.5	**93.7	47.6	
331012	Sheet and strip ----- do	*80.2	46.5	*68.5	29.1	
331013	Plates ----- do	(S)	51.7	**154.4	61.2	
331015	Structural shapes ----- do	**55.2	27.1	*53.8	27.4	
331017	Wire and wire products ----- do	*16.5	10.7	(S)	3.2	
331019	All other carbon steel shapes and forms ----- do	(S)	15.8	*20.1	14.9	
Alloy steel, except stainless:						
331021	Bars and bar shapes ----- do	**27.3	27.1	(S)	13.3	
331029	All other alloy steel mill shapes and forms ----- do	*13.4	13.9	*11.0	20.0	
Stainless steel:						
331033	Sheet and strip ----- do	(S)	43.5	(S)	14.7	
331050	All other stainless steel mill shapes and forms ----- do	(S)	23.7	*5.3	15.2	
Copper and copper-base alloy:						
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- million lb	**5.5	10.1	(S)	2.2	
335143	Plate, sheet, and strip, including military cups and discs ----- do	*7.4	11.3	.4	.7	
335152	Pipe and tube ----- do	(S)	12.8	(S)	3.2	
Aluminum and aluminum-base alloy:						
335301	Sheet, plate, and foil ----- do	**9.1	16.1	(S)	3.8	
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do	**5.2	11.0	1.9	2.3	
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) ----- do	*4.5	6.7	(S)	2.0	
335609	Nonferrous metal mill shapes and forms, except copper and aluminum -----	5.0	14.2	(X)	4.5	
Primary metals and scrap:						
331051	Pig iron, excluding silvery iron ----- 1,000 s tons	(S)	10.0	9.2	1.7	
190023	Iron and steel scrap, excluding home scrap ----- do	(S)	4.9	49.0	3.7	

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3559, SPECIAL INDUSTRY MACHINERY, N.E.C.—Con.				
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased	1,000 s tons	(S)	38.1	(S)
	Produced and consumed	do	(S)	(X)	(S)
332045	Steel:				
	Purchased	do	(S)	29.4	(S)
	Produced and consumed	do	(Z)	(X)	(S)
336100	Aluminum and aluminum-base alloy:				
	Purchased	million lb	(S)	25.0	(S)
	Produced and consumed	do	(S)	(X)	(S)
336200	Copper and copper-base alloy:				
	Purchased	do	*6.8	13.0	(S)
	Produced and consumed	do	(Z)	(X)	(S)
336902	Other nonferrous:				
	Purchased	do	5.7	12.1	(X)
	Produced and consumed	do	(Z)	(X)	(X)
344301	Metal tanks, heat exchangers, steam condensers, and other boiler-shop products; fabricated steel plate weldments	(X)	53.6	(X)	41.5
345001	Bolts, nuts, screws, rivets, and screw machine products	(X)	16.6	(X)	17.9
346901	Metal stampings	(X)	10.6	(X)	2.9
349402	Fabricated metal pipe, valves, and pipe fittings	(X)	31.9	(X)	21.5
	Bearings:				
356218	Ball	(X)	16.5	(X)	6.8
356201	Roller	(X)	12.1	(X)	7.2
356810	Plain bearings and bushings	(X)	17.1	(X)	3.0
356601	Speed chargers, drives, and gears	(X)	23.5	(X)	19.6
356101	Pumps and pump parts	(X)	31.2	(X)	24.3
356301	Air and gas compressors, except refrigeration compressors	(X)	9.4	(X)	2.4
349421	Fluid power (hydraulic and pneumatic) valves	(X)	14.7	(X)	(13)
359921	Fluid power (hydraulic and pneumatic) cylinders and rotary actuators	(X)	12.4	(X)	(13)
356120	Fluid power (hydraulic only) fluid power pumps and motors	(X)	12.1	(X)	(13)
356921	Filters for hydraulic fluid power systems	(X)	7.2	(X)	(13)
360101	Electrical transmission, distribution, and control equipment	(X)	75.8	(X)	48.0
	Electric motors and generators:				
362115	Fractional horsepower electric motors (less than 1 hp), excluding timing motors:				
	Purchased	thousands	**220.4	19.0	(S)
	Produced and consumed	do	5.4	(X)	(S)
362120	Integral horsepower motors and generators (1 hp or more):				
	Purchased	do	(S)	39.7	(S)
	Produced and consumed	do	.5	(X)	(S)
970099	All other materials and components, parts, containers, and supplies	(X)	594.8	(X)	13439.3
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	393.7	(X)	293.3

¹For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

²Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

³For 1977, the delivered costs for material codes 336902, 349421, 349461, 359922, and 356120 were included with material code 970099.

⁴For 1977, material code 331051 was included with material code 190023 to avoid disclosing data for individual companies.

⁵For 1977, the delivered costs for material codes 332045, 336200, and 336902 were included with material code 970099.

⁶For 1982, material code 336200 is included with material code 336902 to avoid disclosing data for individual companies.

⁷For 1977 and 1982, material code 331033 was included with material code 331050 to avoid disclosing data for individual companies.

⁸For 1982, material code 336200 is included with material code 336902 to avoid disclosing data for individual companies.

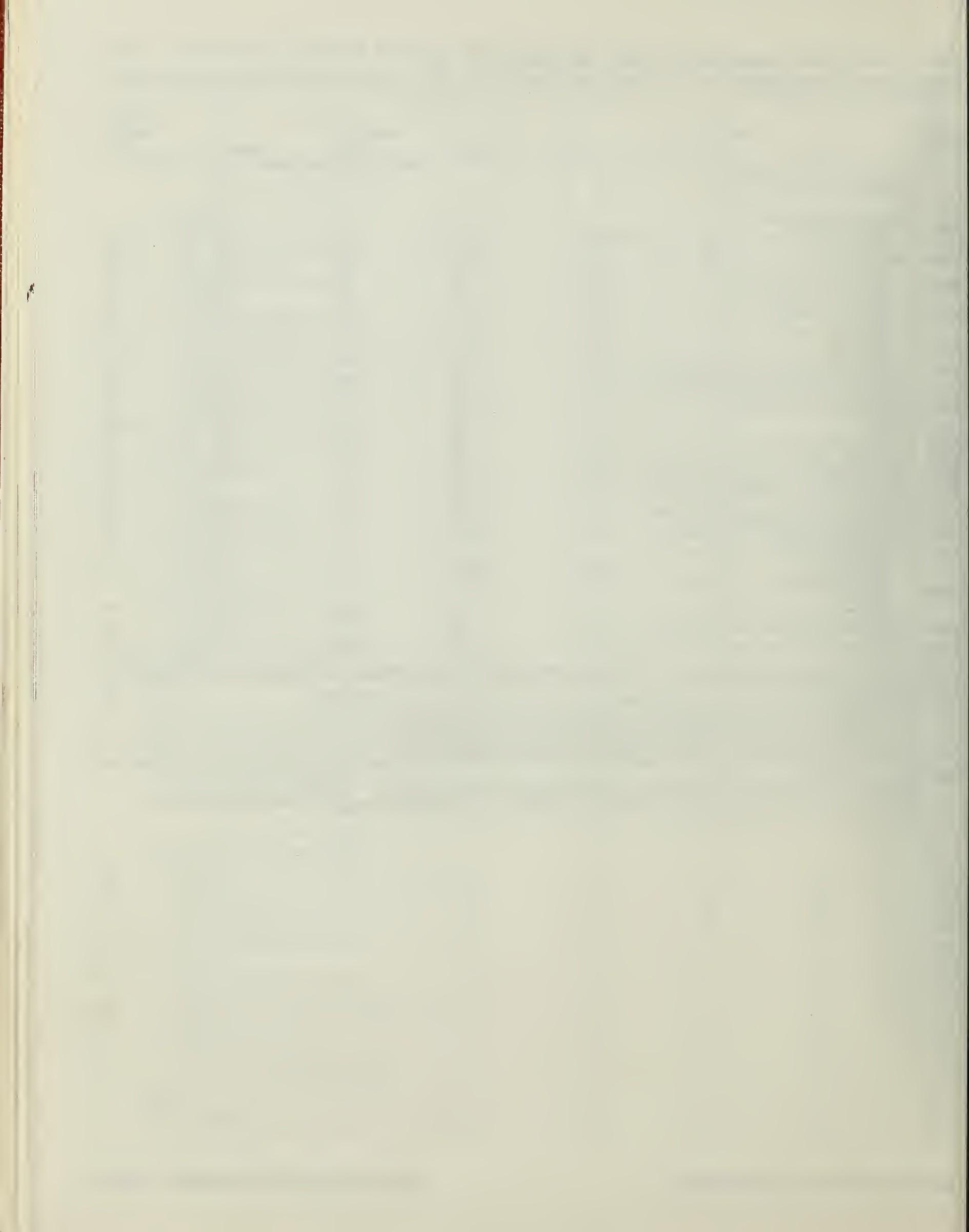
⁹For 1977, the delivered costs for material codes 336200, 336902, 362115, 349421, 349461, 356120, 356102, 356301, 356921, 359921, 359922, and 265001 were included with material code 970099.

¹⁰For 1982, the delivered costs for material codes 346200, 362115, and 356301 are included with material code 970099 to avoid disclosing data for individual companies.

¹¹For 1977, material code 306902 was included with material code 307902 to avoid disclosing data for individual companies.

¹²For 1977, the delivered costs for material codes 336100, 336200, 336902, 349421, 349461, 356120, 356921, and 359921 were included with material code 970099.

¹³For 1977, delivered costs for material codes 336902, 349421, 359921, 356120, and 356921 were included with material code 970099.



APPENDIX A.

Explanation of Terms

This appendix is in two sections. Section 1 includes items which were requested of all establishments that were mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) that were not included on the report forms but were derived from information collected on the forms. Section 2 covers supplementary items that were requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in tables 3c and 3d of this report.

SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

Number of establishments and companies—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operates at different physical locations, even if the individual locations are producing the same line of goods, a separate report was requested for each location. If the company operates in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on the number of custodial employees, capital expenditures, inventories, or any shipments from inventories during the portion of the year the plant was in operation.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction to Part 1 of the General Summary subject report.

Employment and related items—The regular report forms requested separate information on production workers as of a payroll period for each quarter of the year and on other employees as of the payroll period which included the 12th of March.

All employees—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period ending nearest the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production workers—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All other employees—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment who are engaged in the construction of major additions or alterations to the plant and who are utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls was also requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multistablishment companies. However, these figures are not included in the totals for individual industries shown in this report. They are included in the general summary and geographic area reports and in the final bound volumes as a separate category.

Payrolls—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1982. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers

of corporations, but excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

Production-worker hours—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

Cost of materials—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, components, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

Specific materials consumed—In addition to the total cost of materials, which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the specific materials consumed is shown in table 7 if appropriate to the industry. Establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the Introduction for the importance of administrative records in the industry.)

Value of shipments—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further

processing. Included are all items made by or for the establishments from materials owned by it, whether sold transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

Individual products—As in previous censuses, data were collected for almost all industries on the quantity and value of individual products shipped. In the 1982 census program information was collected on the output of approximately 11,000 individual product items. The term "product," as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 items; whereas, "motor gasoline" was reported as a single item.

Approximately 6,000 of the product items were listed separately on the 1982 census report forms. Data for about 5,000 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1982 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a) together with the tieline total value collected in the census for reconciliation purposes.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1977 information is presented for most products.

Typically, both quantity and value of shipments information was collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers was also collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production was also collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

Classes of products—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the

Individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1982 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

Duplication in cost of materials and value of shipments—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication, since the products of some industries are used as materials by others. With some important exceptions, such as for motor vehicles and parts, this duplication is not significant at the four-digit industry level. However, it is significant at the two-digit and three-digit industry group level because these totals often include industries that represent successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the "Food" group and the addition of pulp mills to paper mills in the "Paper and Allied Products" group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the census of manufactures.

Value added by manufacture—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories. Because of the change in instructions for reporting inventories for 1982, the 1982 figure for value added is not strictly comparable to prior-year data. This is explained more fully in the inventories section below.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

New and used capital expenditures—For establishments in operation and establishments under construction but not yet in operation, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures exclude that portion of expenditures leased from nonmanufacturing concerns, new facilities owned by the Federal Government but operated under

contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers were also requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred to the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; i.e., it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form and is subject to sampling error (see table 3d). The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in both tables 3a and 3d. The figure in table 3a is a census universe total and may differ from the results of the ASM sample shown in table 3d. Since the figures in table 3d are subject to sampling error, they are not considered as reliable as the universe figures.

End-of-year inventories—Respondents were asked to report their 1981 and 1982 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown in footnote 4 of table 1a. However, the end-of-1981 figure shown in this footnote may differ from the corresponding value published as part of the 1981 Annual Survey of Manufactures.

This difference at the four-digit SIC level is due primarily to the effects of industry shifts. As described in the Industry Classification of Establishments section of the Introduction, ASM noncertainty plants are allowed to shift from one industry to another in a census year; whereas, they are "frozen" in a particular industry in ASM years. Other explanations for this difference include the effects of sampling and processing errors and revisions to end-of-1981 data reported by respondents.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw

materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing," which are aggregates of figures reported by establishments in specified industries.

Specialization and coverage ratios—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the Introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary

products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

Supplemental labor costs—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records do not generally provide reliable figures on net employee benefits of these types.

Cost of purchased services—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property are also included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force are also excluded.

The response coverage ratio shown in table 3d for each of the three types of purchased services listed above is a measure of the extent to which respondents reported for each item. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight; see section 3) for those ASM establishments that reported the

specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

Electric energy used for heat and power—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy and quantity of generated-less-sold electric energy were collected only on the ASM forms. The cost and quantity of purchased electric energy represent the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

Beginning- and end-of-year depreciable assets—The data encompass all fixed depreciable assets on the books of establishments at the beginning and at the end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are non-depreciable capital assets, including inventories and intangible assets, such as patent rights and royalties. Also excluded are land and depletable assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

New and used capital expenditures—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)

Breakdown of new capital expenditures for machinery and equipment—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement. Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

The "not specified by kind" or n.s.k. item for expenditures for new machinery and buildings, shown in table 3d, represents the total machinery and equipment expenditures for establishments that did not break down their expenditures for the three specific categories. This means that for most industries the specific categories are understated.

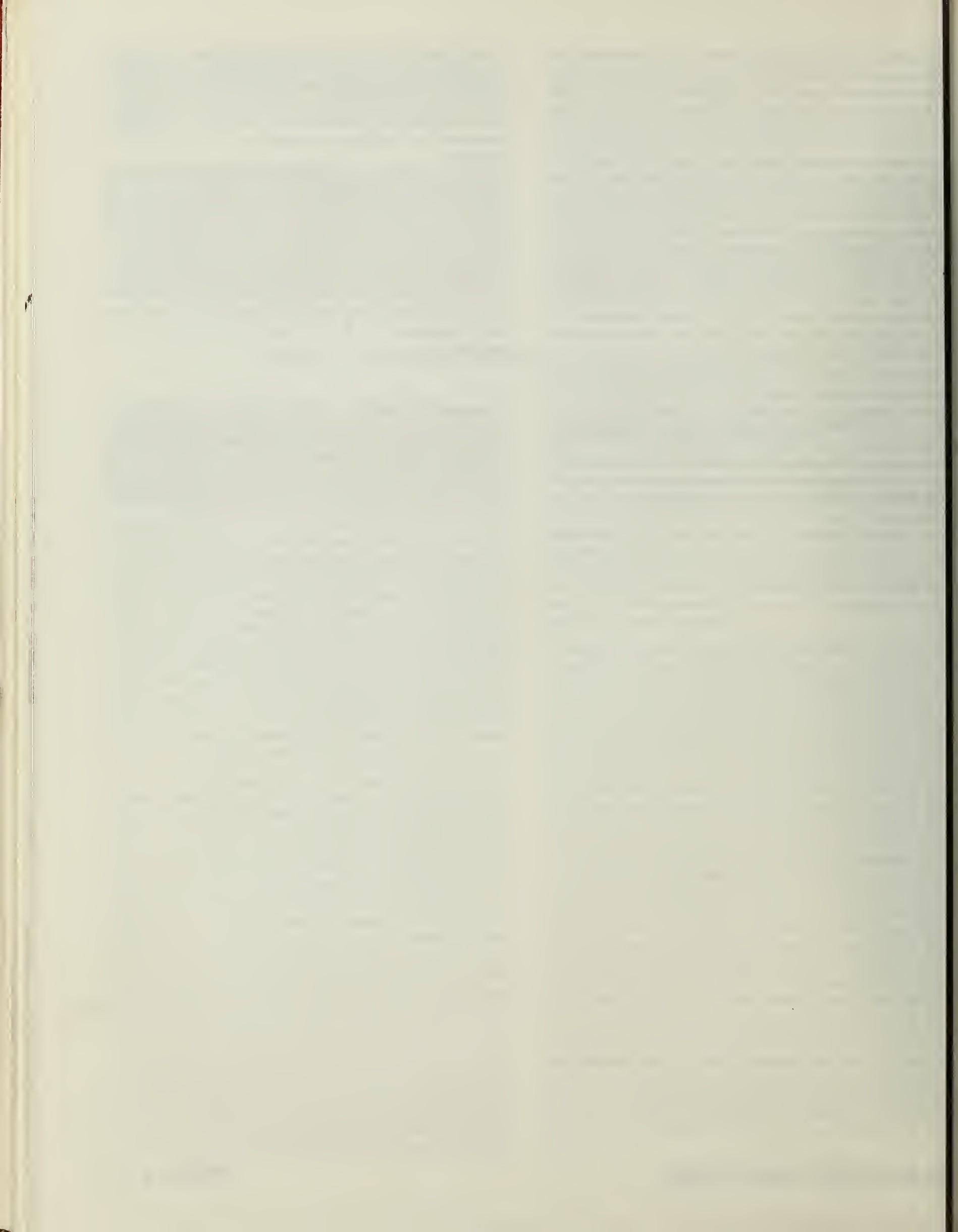
Retirements—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1982. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent was also requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

Rental payments—This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company, and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

Depreciation charges—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.



APPENDIX B.

Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 55,000 manufacturing establishments selected from a total of about 225,000 establishments. These 225,000 establishments represent all manufacturing establishments of multiunit companies and all single-unit manufacturing establishments with five employees or more tabulated in the 1977 Census of Manufactures. This mail portion is supplemented by a Social Security Administration list of new manufacturing establishments opened after 1977. The individual establishments were defined as the sampling unit for this sample. This is a change from the previous ASM sample when companies were used as the sampling unit. The implication of this change is that the probability of selection of any establishment relates only to the size of the establishment itself and is independent of the size of the company with which the establishment is affiliated. The efficiencies associated with the change to an establishment sample have made it possible to reduce the mail sample panel from 70,000 establishments in 1978 to 55,000 establishments in the current panel.

The nonmail portion of the survey includes all single-unit establishments that were tabulated with less than five employees in the 1977 Census of Manufactures. Although this portion contained approximately 125,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of other Federal agencies. This administrative record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under special conditions, which safeguard the confidentiality of both tax and census records. Estimates for data for these small establishments were developed using industry averages in conjunction with the administrative information.

The corresponding estimates for the mail and nonmail establishments were added together, along with the adjusted base-year differences as defined in Description of Estimating Procedures below. The remaining description of the survey sample relates only to the mail portion of the ASM sample.

All establishments with 250 employees or more in the 1977 census were included in the survey panel with certainty. These establishments collectively account for approximately 65 percent of the total value of shipments for manufacturing establishments in the 1977 census. Smaller establishments were sampled with probabilities ranging from 1.000 down to 0.005 in accordance with mathematical theory for optimum allocation of a sample.

The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. For establishments included in the 1977 Census of Manufactures, the measure of size depended directly upon each establishment's 1977 product class values and the

historic variability of the year-to-year shipments of each product class. Roughly equivalent measures of size were assigned to postcensus birth establishments based on their industry codes and anticipated payroll and employment.

The method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight to differences in employment, value added, and other general statistics, for these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of establishments into and out of a given sample panel without introducing a bias into the survey estimates.

DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1978-1981 were computed using a modified "difference estimate" formula. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1977 census published number for an item total and the linear ASM estimate of the total for 1977. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

This base-year difference was then adjusted to reflect the estimated growth at the four-digit or, in the case of product classes, five-digit based Standard Industrial Classification (SIC) level from 1977 to the year of the survey; for example, 1981. It should be noted that due to processing constraints, the growth factors lagged one year; i.e., if 1981 is the survey year, they were not based on the estimated growth from 1977 to 1981 but rather the growth from 1977 to 1980. This one-year lag had negligible effect on the estimates, particularly at the total manufacturing level where the adjusted base-year difference accounted for less than 1 percent of the estimate for total value of shipments.

These adjusted base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1978-1981. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1982 sample data included in table 3d were also developed using difference estimates. However, since the universe totals for the census year (1977 or 1982) were not known, a modification of the procedure described above was necessary. For each item in table 3d, except purchased services and breakdown of expenditures for new machinery and equipment (see further description in appendix A, section 2), linear

estimates of the publication totals from the ASM mail sample were adjusted by the difference between imputed census totals and the corresponding ASM mail sample estimates of these imputed totals. These imputed totals are obtained by applying industry average ratios to control item values at the establishment level. For example, an imputed total beginning assets figure is obtained by multiplying each establishment's total value of shipments by the industry (four-digit SIC) average for the ratio of beginning assets to shipments.

Separate estimates for the nonmail establishments were not developed. However, their contribution to the publication estimates is reflected in the difference adjustment.

The method of inventory valuation percentages included in table 3c was developed using both complete census information and ASM estimates. The percentages for the four major categories (LIFO, non-LIFO, valuation method not reported, and LIFO reported without associated value and reserve) were derived from the complete census and correspond to the values included in table 3d. The percentages for the specific non-LIFO methods of valuations (FIFO, average cost, specific costs, etc.) are ratio estimates developed from the ASM in conjunction with the census universe estimate for the total of the non-LIFO methods.

QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. Except for table 3c, they are presented in the form of relative standard errors, the standard errors divided by the estimated values to which they refer. In table 3c, "absolute" standard errors of the estimates are presented.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total and about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as the survey.

Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

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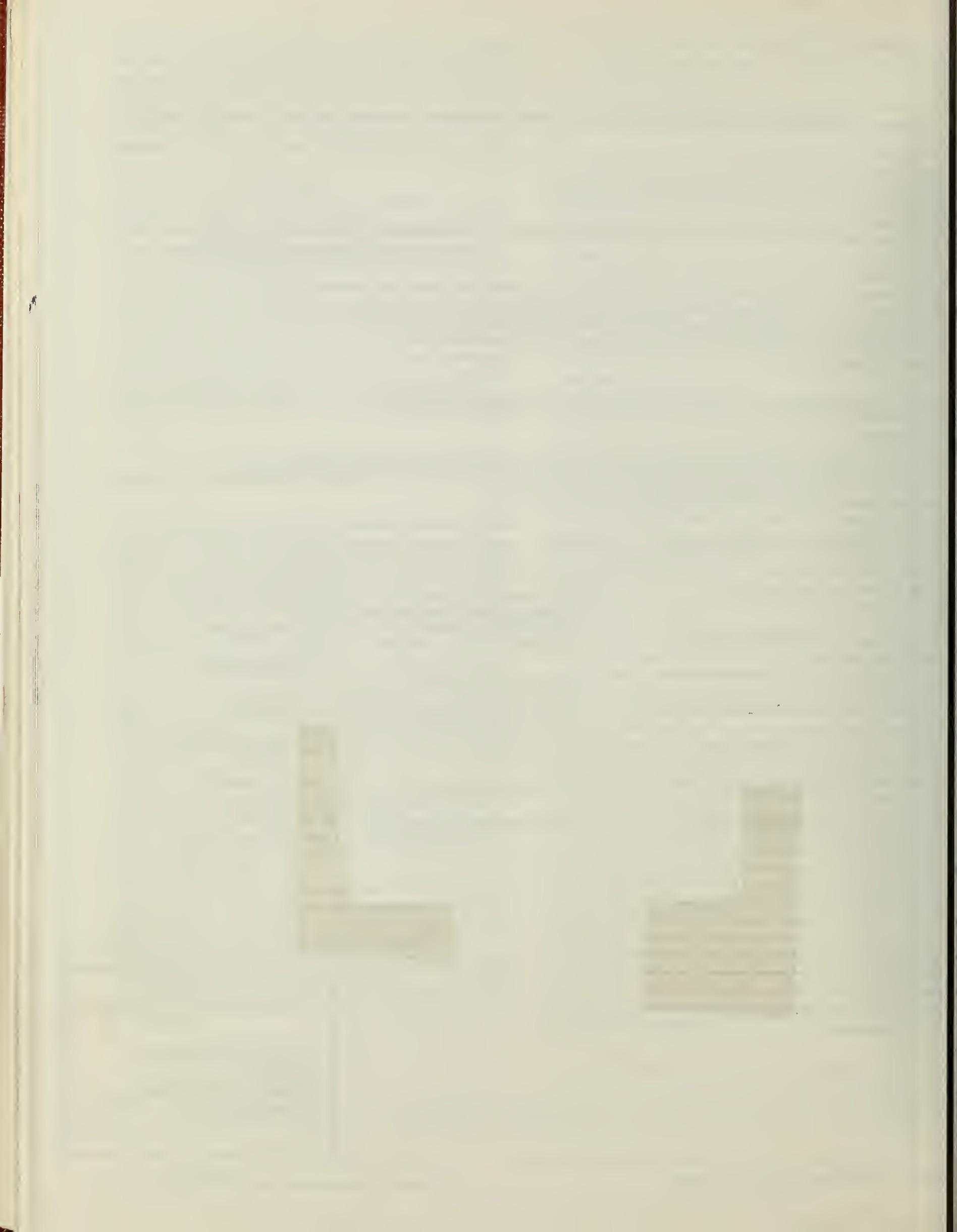
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Final detailed statistics are issued in separate paperbound reports.

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Each of the 82 reports provides information for a group of related industries (e.g., "dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 452 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment and degree of primary product specialization. Statistics are given on production of specific products and consumption of energy and various materials by industry.

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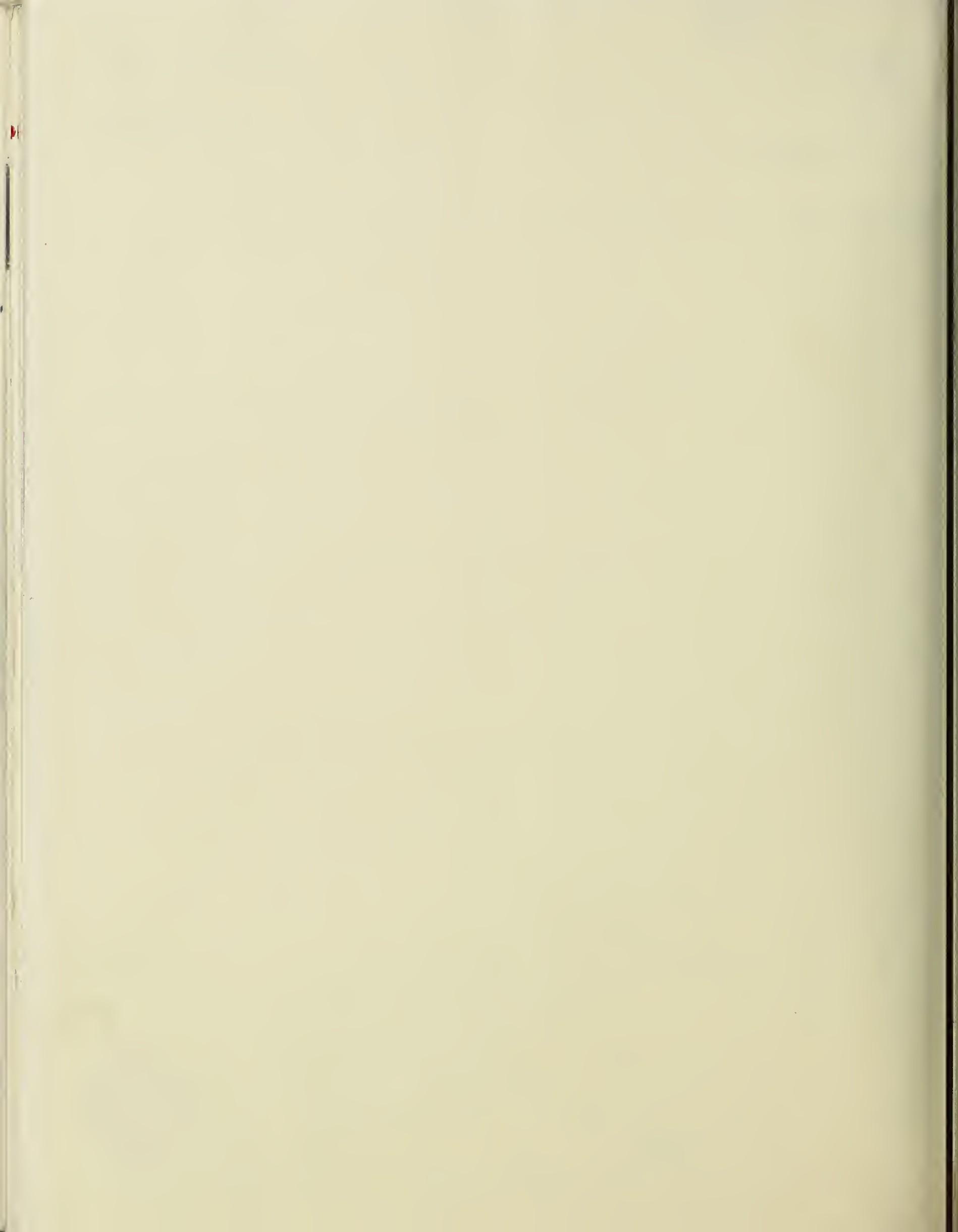
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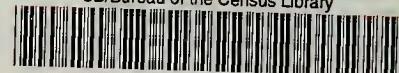
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